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GRÆCO-ROMAN MURAL DECORATION

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THIRTY VOLUMES

ILLUSTRATED

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SCHEME OF SOUND SYMBOLS

FOR THE PRONUNCIATION OF WORDS.

Note.—(-) is the mark dividing words respelt phonetically into syllables; (′), the accent indicating on which syllable or syllables the accent or stress of the voice is to be placed.

Sound-symbols employed in Respelling.	Representing the Sounds as exemplified in the Words.	Words respelt with Sound-symbols and Marks for Pronunciation.
ā	mate, fate, fail, aye	*māt, fāt, fāl, ā.*
ă	mat, fat	*măt, făt.*
â	far, calm, father	*fâr, kâm, fâ′ther.*
ä	care, fair	*cär, fär.*
aw	fall, laud, law	*fawl, lawd, law.*
ē	mete, meat, feet, free	*mēt, mēt, fēt, frē.*
ĕ	met, bed	*mĕt, bĕd.*
ė	her, stir, heard, cur	*hėr. stėr, hėrd, kėr.*
ī	pine, ply, height	*pīn, plī, hīt.*
ĭ	pin, nymph, ability	*pĭn, nĭmf, ă-bĭl′ĭ-tĭ.*
ō	note, toll, soul	*nōt, tōl, sōl.*
ŏ	not, plot	*nŏt, plŏt.*
ô	move, smooth	*môv, smôth̄.*
ō.	Goethe (similar to *e* in her)	*gō′tėh.*
ow	noun, bough, cow	*nown, bow, kow.*
oy	boy, boil	*boy, boyl.*
ū	pure, dew, few	*pūr, dū, fū.*
ŭ	bud, come, tough	*bŭd, kŭm, tŭf.*
û	full, push, good	*fûl, pûsh, gûd.*
ü	French plume, Scotch guid	*plüm, güd.*
ch	chair, match	*chär, măch.*
ċh	German buch, Heidelberg, Scotch loch (guttural)	*bôċh, hī′dėl-bĕrċh, lŏċh.*
g	game, go, gun	*gām, gō, gŭn.*
j	judge, gem, gin	*jŭj, jĕm, jĭn.*
k	king, cat, cot, cut	*kĭng, kăt, kŏt, kŭt.*
s	sit, scene, cell, city, cypress	*sĭt, sēn, sĕl, sĭt′ĭ, sī′prĕs.*
sh	shun, ambition	*shŭn, ăm-bĭsh′ŭn.*
th	thing, breath	*thĭng, brĕth.*
th	though, breathe	*thō, brēth.*
z	zeal, maze. muse	*zēl, māz, mūz.*
zh	azure, vision	*ăzh′er, vĭzh′ŭn.*

MOLASSES, n. *mō-lăs′ĕz* [F. *mélasse;* It. *melassa*, molasses—from Sp. *melaza*, the dregs of honey, the drainings of sugar: Port. *melaço*, molasses]: liquid which drains from raw sugar during the process of granulation and cooling; treacle: see SUGAR.

MOLAY, *mo-lā′*, JACQUES DE: 1244–1314; b. Burgundy. Nothing is known of his early life, except that he joined the order of Knights Templars, and became grand master about 1298. At that time the former splendid success of the various religious orders had forsaken them. Palestine was again in the power of the Mohammedans, and the Templars had retired to Cyprus, whence they in vain appealed to Europe for aid in reconquering the Holy Land. Then De M. entered into alliance with the Mogul Tartars in their war against Syria and Egypt, commanding one wing of their army, with which he invaded Syria and captured Jerusalem 1299. Next year, however, the Tartars were utterly defeated, and the Templars again driven out of Jerusalem. They retired to the island of Tortosa, near Tripoli; whence, 1302, they were driven to Cyprus. Philip IV. of France, fearing the power and influence of the Templars and Hospitalers, and lusting after their immense wealth, determined on their destruction. Pretending to want to organize another crusade, he summoned the heads of the orders to meet him. De M. landed in s. France at the head of a retinue of 60 chosen knights, and a train of pack-mules laden with treasure. His march through the country, and into Paris, where he arrived 1306, Aug., was like the triumphal procession of a monarch. This only increased Philip's fear and cupidity. Rumors damaging to the Templars had been spread. De M. demanded an investigation from Pope Clement at Poictiers. Formal charges were made, of a heinous nature, to the king, who secretly and simultaneously arrested every Templar in France 1307, Oct. 13. They were charged with denying Christ; adoring an idol; infamous kisses at their initiation; omission of the words of consecration in the mass; and unnatural crimes. Under inhuman torture many of the order confessed these charges to be true; among others De M. is said to have so confessed. The pope at first protested against Philip's arrogant proceeding without his authority; but finally fully sanctioned all. De M. was chained in a dungeon until 1314, when he was burned at the stake on an island of the Seine at Paris, after having declared his former confession false, and his order innocent of the charges made against it. He was the last grand master of the Templars. See TEMPLARS.

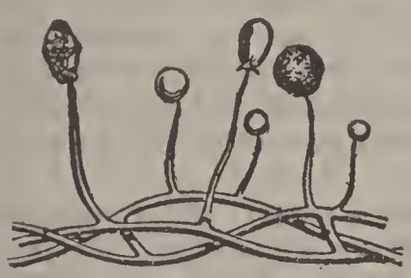
MOLD, n. *mōld* [Dut. *mul,* dust; *mullen,* to crumble away: Goth. *mulda,* dust: Icel. *mold,* earth; *molda,* to commit to earth; *molna,* to molder away]: fine soft earth such as constitutes soil; friable earth; garden-soil; earth or material of which anything is formed. MOLDER, v. *mōld'ėr,* to turn to dust, or crumble by natural decay; to waste away gradually. MOLD'ERING, imp.: ADJ. turning to dust; wasting or crumbling away. MOLDERED, pp. *mōld'ėrd:* ADJ. turned to dust; wasted away. MOLDERY, a. *mōld'ėr-ĭ,* partaking of the nature of mold. MOLD-BOARD, the broad concave part of a plow which receives and lays over the furrow-slice cut off by the coulter, and raised up by the share. MOLD-WARP, n. *-wawrp* [AS. *molde,* earth; *weorpan,* to throw or cast]: a mole, so named from its casting up earth.

MOLD, n. *mōld* [Bav. *mauckelen,* to smell close and musty; *maunken,* to look sour, to smell ill: Dut. *monckelen,* to look gloomy or sour: Dan. *muggen,* sulky, musty]: the thread-like fungi which form on bodies, particularly when exposed to warm or damp air, and which prey upon them and destroy their original properties (see below): V. to cause to contract mold; to become moldy. MOLD'ING, imp. MOLD'ED, pp. MOLD'Y, a. *-ĭ,* covered with mold. MOLD'INESS, n. *-nĕs,* state of being moldy; the minute fungi which appear on organic bodies under certain conditions. IRON-MOLD: see IRON.

MOLD, n. *mōld* [F. *moule;* OF. *modle;* Sp. *molde,* a mold, a model: It. *modolo,* a model—from L. *modŭlus,* a small measure]: that in which anything is cast and receives its form; shape or bed in which metal and other castings are made; the matrix; a shape for confectionery; the cast or form given; model or pattern from which workmen execute moldings, ornaments, etc.: V. to form into a particular shape; to fashion; to knead. MOLD'ING, imp. (see FOUNDING): N. anything formed in a mold; an ornamental form in wood or stone (see MOLDINGS): the contour given to the angles of cornices, capitals, window-jambs, etc.; a small border or edging to a panel, or to a picture-frame. MOLDING-SAND: sand is used for molding, in preference to all other materials, on account of its refractory nature, which enables it to resist the destructive action of molten metal at high temperatures; on account of its porosity, which allows the free escape of the gases generated in casting; and on account of its peculiarly compact and adhesive properties, which not only permits of its being molded to any desired shape, but also enables it to resist a great amount of pressure exerted by a liquid. The best molding sand is obtained from the coal measures, and the later red sandstone formations. Sand from the green-sand and chalk formations is also very satisfactory. MOLD'ED, pp. MOLD'ABLE, a. *-ă-bl,* that may be molded or formed. MOLD'ER, n. *-ėr,* one who molds or forms into shape.

MOLD, *mōld* (anciently *Monte Alto;* Welsh, *Wyddgrug*): parliamentary borough in the county of Flint, Wales, on the Alun, 12 m. w.s.w. of Chester. Though Flint is the county town, the assizes and quarter-sessions for the county are held here. The town possesses a good market, a fine old church, and several dissenting chapels. It is connected with England by a branch of the Chester and Holyhead railway. The neighborhood abounds in mineral wealth, coal and lead being the principal product; it has also numerous interesting relics of antiquity—e.g., so-called Druidic circles, Roman roads and encampments, Saxon earthworks, an eminence called *Bryn Beili* (formerly surmounted by a castle), and a castellated building known as the Tower of Rheinallt ab Gruffydd, the two latter having been scenes of frequent contentions between the English and Welsh. Many old families have mansions in the neighborhood, whose pleasing variety of scenery renders it attractive. Pop. of parliamentary borough about 6,000.

MOLD, or MOLDINESS: common name of many minute fungi which appear, often in crowded multitudes, on animal and vegetable substances, either in a decaying or in a living but morbid state. To the naked eye, they often seem like patches or masses of fine cobweb, and are discovered by the microscope to consist of threads more or less distinctly jointed, sometimes branched. Some species of M. occur on many different substances; others seem peculiar to substances of particular kinds, as decaying pears, decaying gourds, etc. Some of the molds belong to the sub-order of fungi called *Physomycetes:* see FUNGI. One of these is the COMMON M. (*Mucor mucedo*), plentifully found on fruit, paste, preserves, etc., in incipient decay, whose progress it hastens. It consists of cobweb-like masses of threads, from which rise many short stems, each bearing at the top a roundish membranous blackish spore-case.—A nearly allied, also very common species, is *Ascophora mucedo*, which forms a bluish M. on bread. From a spreading cobweb-like bed rise long slender branches, terminated by spore-cases, of which the vesicle collapses into the form of a little *pileus*.—An interesting species of M., remarkable for luxuriance and beauty of colors—at first white, then yellow, with orange spore-cases, then shining green or olive, and with threads often several inches long—grows on fatty substances.—Other species of M. are ranked among *Hyphomycetes*, a sub-order of Fungi, having a floccose thallus and naked spores. One of these is the BLUE M. (*Aspergillus glaucus*), which imparts to cheese a flavor agreeable to epicures, and perhaps marks it as in a condition most suitable for promoting the digestion of other aliments, of which epicures eat too much. Advantange is often taken



Common Mold (*Mucor mucedo*), highly magnified.

of the fact, that a small portion of cheese affected with M. will speedily infect sound cheese into which it may be introduced. It is one of the few cases in which the propagation of these fungi is ever desired and sought after by man.—Snow M. (*Lanosa nivalis*) is found on grasses, and especially on barley and rye beneath snow, often destroying whole crops. It appears in white patches of a foot or more in diameter, which finally become red as if dusted with red powder.

Even living animals are liable to be injured by fungi of this kind. Silk-worms are killed in great numbers by one called Muscardine (q.v.), or Silkworm Rot. Such fungi are sometimes developed on the mucous membrane and in internal cavities of vertebrated animals; and on the bodies of invertebrated animals, as the common house-fly, which, in the end of autumn, when it becomes languid, often dies from this cause. Even strongly-scented substances, if moist, are liable to be attacked by M. of one kind or other; nor are strong poisons, either animal or vegetable, a sufficient safeguard. *Ascophora mucedo* springs up readily in paste full of corrosive sublimate; and the mycelium of molds is found in strong arsenical solutions. The only sure preventive of M. is dryness. Many of the molds vegetate in liquids, but do not attain their perfect development, appearing only as filamentous and flocculent mycelia. The *Vinegar Plant* (q.v.) is an instance of this kind.

Mildews and Molds are very nearly allied.

The rapidity with which these fungi are produced is marvellous. 'In favorable circumstances, a plant will pass through every stage of growth to perfect maturation of its seeds in less than two days, the threads which sustain the ripe sporangia being so long, and yet so delicate, as to make it a marvel that they can remain erect.'—(*Berkeley*).

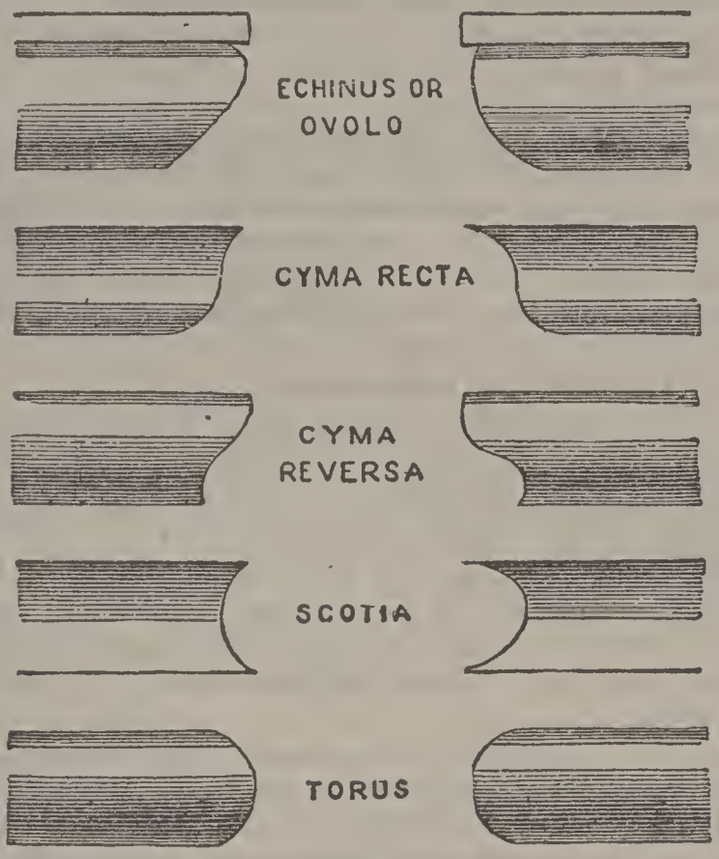
MOLDAU, *mōl'dow* (Bohemian, *Vltava*): chief river of Bohemia, and an important tributary of the Elbe. It rises in the Böhmerwald Mountains, on the s.w. frontier 3,750 ft. above sea-level, and flows s.e. to Hohenfurth, where it bends n. to its confluence with the Elbe opposite Melnik, after a course of 276 m. Its course to the point of confluence is longer than that of the Elbe, and the navigation of that river is greatly facilitated by the body of water which it contributes. It receives on the left, the Wotawa and the Beraun; and on the right, the Luschnitz and the Sazawa. The chief towns on its banks are Krumau, Budweis, and Prague. It becomes navigable from Budweis.

MOLDAVIA, *mŏl-dā'vē-a*, and WALACHIA, *wŏl-dā' kē-a:* two states forming the so-called *Danubian Principalities*, which, since 1861, Dec. 23, have been united under one prince and one administration: see Roumania.

MOLDER, MOLDERING: see under Mold 1.

MOLDINGS.

MOLD'INGS: curved and plane surfaces used as ornaments in cornices, panels, arches, etc., and in all enriched apertures in buildings. In classic architecture the M. are few in number, and definitely fixed in their forms



Classic Moldings.

There are eight kinds of these regular M., viz., the Cyma, the Ovolo (or Echinus), the Talon, the Cavetto, the Torus, the Astragal, the Scotia, and the Fillet (q.v.); and each of these M. has its proper place assigned to it in each order: see COLUMN. In Gothic architecture, and all other styles, the M. are not reduced to a system as in the Greek and Roman styles, but may be used in every variety of form at the pleasure of the artist. Certain forms generally prevail at one period in any style.

Various Moldings.

Thus, in Gothic architecture, the date of a building may in many instances be determined by the form of the M. The Norman M. were very simple in outline, and fre-

quently enriched with the zigzag and billet ornaments. Fig. 1 is a common Norman form.

In the early English style, also, the M. are simple in outline, usually arranged in rectangular divisions, as in fig. 3, and consist of alternate rounds and hollows. In late examples of this style, the fillet was introduced (fig. 2), and led to the more elaborate form of M. during the Decorated period (fig. 4).

The M. of the Perpendicular style are generally flatter and thinner than the preceding, and have large hollows separated by narrow fillets, producing a meagre effect.

Each of these styles has its peculiar ornaments and style of foliage; and when these are used with the M., there is no difficulty in determining the approximate date of a building.

MOLDWARP: see under MOLE 3.

MOLE, n. *mōl* [Ger. *mahl*, a stain, a spot: Goth. *mail*, a mark: Scot. *mail*, a spot in cloth: Sw. *mal*, a mark: L. *macŭla*, a spot or blemish]: spot or permanent mark on some part of the human skin: see NÆVUS.

MOLE, n. *mōl* [F. *mole*, a bank or causeway on the seaside—from L. *mōlēs*, a huge mass or pile: It. *mole*]: a massive work of stones formed in the sea to protect a harbor from the violence of the waves; a huge shapeless mass.

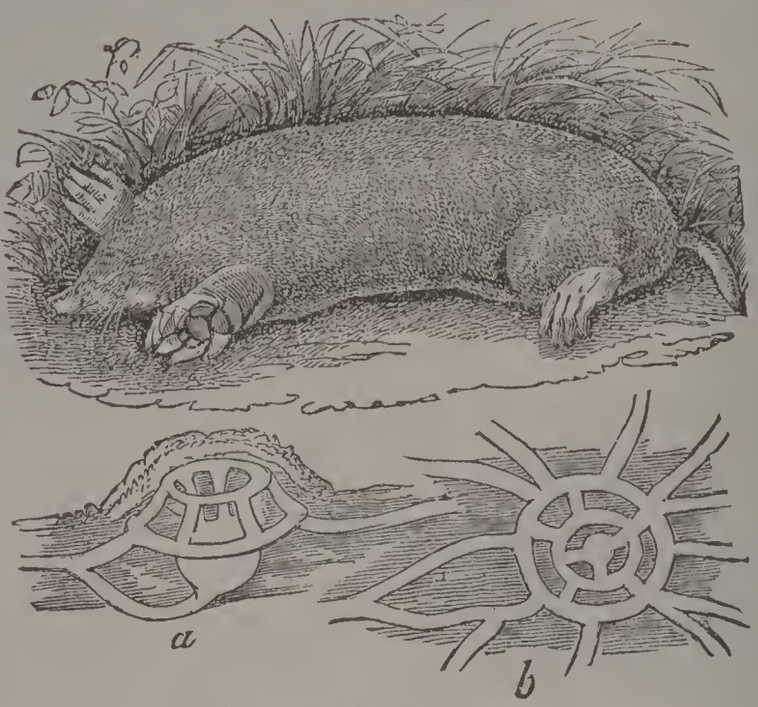
MOLE, n. *mōl* [Dut. *mol*, a mole: Ger. *maulwerf;* Icel. *moldvarpa*, so named from its habit of casting up little hillocks of mold or earth]: small animal which burrows in the ground and throws up mold or earth (see below). MOLE-BAT, a lumpy sea-fish. MOLE-CAST, a mole-hill. MOLE-EYED, nearly blind. MOLE-HILL, a little hillock thrown up by moles; anything very small, or of infinitely less importance than represented, as, 'to make a mountain of a *mole-hill*. MOLE-TRACK, the underground course of a mole. MOLDWARP, n. *mōld'-wawrp* [OE. *molde*, mold, and *werpen*, to throw up]: in *OE.*, the name of which *mole* is the shortened form.

MOLE, n. *mōl* [L. *mola*, a false conception: It. *mola:* F. *mole*]: in *med.*, a mass of fleshy matter generated in the uterus.

MOLE (*Talpa*): genus of quadrupeds of order *Insectivora*, family *Talpidæ*. All the *Talpidæ* live chiefly underground, and their structure is adapted to their mode of life. In their general form, the character of their fur, the shortness of their limbs, the great muscular strength of the foreparts and great breadth of the forepaws, the elongated head, the elongated and flexible snout, the smallness of the eyes, and the complete concealment of the ears, they all resemble the COMMON M. (*T. Europæa*), with which they nearly agree also in the nature of their food, their mode of seeking it, their dentition, and the shortness of their alimentary canal.—The Common M. is abundant in most parts of Europe, except the utmost north and utmost south. Instead of its or-

dinary uniform black color, it is occasionally found yellowish white, or gray, and even orange. Its silky or velvety fur lies smoothly in every direction, the short hairs growing perpendicularly from the skin—a peculiarity which preserves it clean as the animal moves either forward or backward in its subterranean galleries. The forepaws are not only very broad, but are turned outward, for better throwing back the earth in burrowing: they are terminated by five long and strong claws. The phalangeal bones are remarkable for breadth, and an elongated bone of the carpus gives additional strength to the lower edge of the paw. The two bones of the forearm are fastened together. The shoulder-blades and the clavicles are very large; and the sternum has an elevated ridge as in birds and bats, for the attachment of powerful muscles. The muscles which move the head also are very powerful, and the servical ligament is even strengthened by a peculiar bone; the M. making much use of its flexible snout in burrowing. The hinder limbs are comparatively feeble, and the feet small, with five toes. The eyes are black and very small, capable of being partially retracted and exserted. The senses of hearing, taste, and smell are very strongly developed. The cutting-teeth are very small and sharp; the canines long and sharp; the true molars broad, with many sharp conical elevations. This dentition adapts the animal for feeding not only on worms and grubs, but also on frogs, birds, and small quadrupeds, which accordingly are its occasional prey, though earthworms are its chief food. The M. is excessively voracious; digestion is rapid, and no long interval can be endured between meals, hunger soon ending in death. When pressed by hunger, it will attack and devour even one of its own kind; and its practice is immediately to tear open the belly of any bird or quadruped which it has killed, and, inserting its head, to satiate itself with the blood. In eating earthworms, it skins them with remarkable dexterity. In quest of them, it works its way underground, throwing up the earth in mole-hills; more rarely in the fine nights of summer it seeks them on the surface of the ground, when it is itself liable to be picked up by an owl equally in want of food. The habitation of the M. is of very remarkable construction: a hillock of earth larger than an ordinary mole-hill, and containing two circular galleries, one above the other, with five connecting passages, and a central chamber which has access to the upper gallery by three passages; while about nine passages lead away from the lower gallery in different directions. The end of a passage entering a gallery on one side is never opposite to the end of a passage entering on the other. To afford all facility of escape in case of any alarm, a passage leads at first downward from the central chamber, and then upward again till it joins one of the high-roads which the M. keeps always open, which are formed by pressing the earth till it becomes smooth and compact, and are not marked by any mole-hills thrown up, and

which not only serve for escape when necessary, but lead to those parts of the creature's appropriated domain where the ordinary mining for worms is to be prosecuted. The nest in which the female M. produces her young is not this habitation, but is formed generally under a mole-



Mole (*Talpa Europæa*):
a, vertical section of the habitation of the mole; *b*, plan of ditto.

hill rather larger than usual, where two or three runs meet, and is lined with leaves and other warm materials. The M. breeds both in spring and autumn, and generally produces four or five young at a birth. The attachment of the parent moles seems to be strong, but transitory.

It has been sometimes alleged that moles eat vegetable as well as animal food, and that they are injurious to farmers, by devouring carrots and other roots; but it appears rather that they gnaw roots only when in the way of their mining operations, or perhaps, also, in quest of grubs which they contain. Moles are generally regarded as a pest by farmers and gardeners, owing to the injury which mole-hills do to lawns and pastures, the burying up of young plants, and the disturbance of their roots. But they are certainly of use in the economy of nature in preventing the excessive increase of some other creatures; and probably also contribute to the fertility of some pastures, by the continual tillage which they carry on. Mole-traps of various kinds are in use, which are planted, if the mole-catcher is skilful, in the often-traversed roads of the animals. Mole-catching has long been a distinct trade in Britain. Another species (*T. cæca*) is found in the most southern parts of Europe; very similar to the Common M., but rather smaller, and having the eye always covered by the eyelid, so as to justify Aristotle's statement, that the M. is blind.

The N. Amer. species are Star-nosed M. (*Condylura*) and Shrew M. (*Scalops* and *Scapanus*): they are very

similar to the European Common M. above described: see SHREW MOLE: STAR-NOSE.

Among other *Talpidæ* are the CHANGEABLE M., or CAPE M. (*Chrysochloris Capensis*) of s. Africa, remarkable as the only one of the mammalia that exhibits the splendid metallic reflections frequent in some other classes of animals.

MOLÉ, *mo-lā'*, LOUIS MATTHIEU, Comte: French statesman: 1781, Jan. 24—1855, Nov. 23; b. Paris; descendant of the magistrate, Matthieu M. (1584–1653). His father, pres. of the parliament of Paris, died by guillotine 1794: his mother was daughter of Malesherbes. In 1805, M. published *Essais de Morale et de Politique*, in which he vindicated the govt. of Napoleon I. on the ground of necessity. The attention of the emperor was drawn to him; he was appointed to various offices in succession, and raised to the dignity of a count and to a place in the cabinet. After Napoleon's return from Elba, he refused to subscribe the declaration of the council of state banishing the Bourbons forever from France, and declined to take his seat in the chamber of peers. In 1815, Louis XVIII. made him a peer, and he voted for the death of Ney. In 1817, he was for a short time minister of marine; 1830 he became minister of foreign affairs in Louis Philippe's first cabinet, but only for a short time; 1836 he succeeded Thiers as prime minister. His ministry was very unpopular with the liberal party; and he resigned 1839. In 1840 he was chosen a member of the *Académie Française*, and thereafter took little part in politics. M. was fiercely attacked, unjustly it is now believed, as servile toward the court. He believed in strong government, but favored constitutional liberty.

MOLE-CRICKET (*Gryllotalpa*): genus of insects of the Cricket (q.v.) family (*Achetidæ* or *Gryllidæ*), remarkable for burrowing habits and for the great strength and

Mole-Cricket, and Eggs (*Gryllotalpa vulgaris*).

breadth of the forelegs. The other legs also are large and strong, but of the form usual in the family.—The best-known species (*G. vulgaris*)—common in many parts of En-

rope, but very local—is almost 2 in. long; of velvety brown color; the wings, when folded, do not cover much more than one-half of the abdomen, though large when expanded. It uses its forelegs not only for digging burrows in earth, but for cutting through or tearing off the roots of plants which are found in its way. The mole-cricket feeds both on animal and vegetable substances, and often does much injury to crops. The chirping and somewhat musical call of the mole-cricket, produced in the same way as that of the common cricket, is heard chiefly in the end of the spring and beginning of summer, and only in the evening or at night: in parts of England, this sound has gained it the name of *Churworm:* another local English name is *Croaker.*—The female mole-cricket prepares a curious nest, a rounded subterranean cell, about as large as a hen's egg, having a complicated system of winding passages around it and communicating with it. In this cell, she deposits 100 to 400 eggs. The young live for some time in society. They run actively, both in the larva and pupa states. The mole-cricket is very combative, and the victor generally eats the vanquished.—A species of mole-cricket (*G. didactyla*) does great injury to the plantations of sugar-canes in the West Indies.—A curious Indian insect, of closely allied genus (*Schizodactylus monstrosus*), has prodigiously long wings, which, as well as the wing-covers, are rolled into spiral coils at the tips.

MOLECULAR CONSTITUTION OF BODIES: the theory that matter is not strictly homogeneous, but is coarse grained, is now held universally. The 'grains' are termed *molecules,* and are regarded as being of uniform size in the case of any individual substance. The molecules of different substances vary in weight and also, probably, in volume. It follows from this that the passage of a gas to a liquid, or *vice versa,* is not regarded as involving any change in the size of the constituent molecules, but is due to variation in the spaces between the molecules. The facts on which this view of the constitution of bodies is based are very various; they include the dispersion which light undergoes on passing through transparent substances, considerations of surface tension, the difference of electrical potential which occurs when two metals are put in metallic connection, the amount of polarization at the surface of an electrode and an electrolyte, the viscosity and diffusion of gases and their conductivity for heat. This is not the place to attempt to give any details of these investigations; it will suffice to say that they have resulted not merely in furnishing proof that matter has a structure, but in giving limits below which its coarse-grainedness cannot lie. Thus a study of the surface tension of water shows that the range of the molecular forces of the water molecules is about 0.0000000005 in., but the molecules themselves have freedom of movement and can be pressed

more closely together, consequently their diameter must be less than the value given above. The molecules themselves can, of course, be subdivided into atoms by chemical forces, consequently it is necessary to assume a structure for the former. Regarding this very little is known and the various hypotheses which have been put forward have not met with general acceptance. It has been suggested that the atoms are vortex rings in the ether, and it has also been supposed that they are essentially charges of electricity.

MOLECULAR WEIGHT: it is generally agreed that substances consist of separate small particles; these are in a state of rapid vibration which causes them to collide more or less frequently (see MOLECULAR CONSTITUTION OF MATTER). These particles are called *molecules* and the term 'molecular weight' is applied to their relative weight compared with those of hydrogen. The *absolute* weight of a molecule is incredibly small and can only be determined approximately by rather elaborate calculations. The simplest way of finding the molecular weight would, therefore, appear to be to weigh a certain volume of hydrogen and compare its weight with that of an equal volume of other substances. Clearly, however, these other substances must be in a state comparable with that of the hydrogen, i.e., they must be in a gaseous condition and must be under the same conditions of temperature and pressure as those of the hydrogen. In practice, it is found that hydrogen is rather difficult to obtain, preserve and manipulate in a state of purity, consequently, for convenience, the substance, as a gas, is weighed against an equal volume of air. The relative weights of air and hydrogen have been determined with a high degree of accuracy. If the value obtained with air as unity is multiplied by 14.37, we get the relative weight of the gaseous substance as compared with that of hydrogen. Thus, a certain volume of chlorine is found to weigh 2.449 grams, the same volume of air, under similar conditions of temperature and pressure, weighs 1 gram, therefore chlorine is $2.449 \times 14.37 = 35.18$ times heavier than hydrogen. This number, however, cannot be assumed to represent the relative weight of the chlorine molecule unless we know the number of molecules of chlorine and hydrogen present in the volume in question. Here again the absolute number can only be approximated by a somewhat elaborate calculation and we are forced to consider the relative numbers. ' Unlike liquids and solids, all gases behave essentially alike for changes of temperature and pressure, i.e., they contract and expand to practically the same extent. They diffuse according to a simple law and, when they combine chemically, the volumes of the constituents and of the (gaseous) products bear a very simple numerical ratio, such as 1:1, 1:2; 2:1, 2:3, etc. These and other facts led Avogadro,

in 1811, to suggest the *hypothesis* which bears his name. It may be expressed by saying that, under similar conditions of temperature and pressure, equal volumes of all gases contain the same number of molecules. It is clear that the number must be equal or unequal, and, if unequal, why should the gases behave alike? We are now in a position to understand the process involved in determining the molecular weight. If there are the same number of molecules in equal volumes of chlorine and hydrogen, and if these volumes have the weights 35.18 and 1, respectively, then these figures must represent the relative weights of each chlorine and hydrogen molecule. Other facts must now be considered. If a certain volume of hydrogen, containing an unknown number (x) of molecules, is allowed to combine with an equal volume of chlorine, also containing x molecules (see above), we obtain *two* volumes by hydrochloric acid containing, therefore, $2 \times x$ molecules. Each of these acid molecules, however, contain *some* hydrogen, therefore x molecules of hydrogen have given rise to $2 \times x$ molecules of acid and, consequently, as the result of this chemical change, each of the original hydrogen molecules has been divided into two parts. Of course, the same applies to the chlorine. These subdivisions of the molecules are called *atoms* (q.v.). It is, then, obvious that if we represent the relative weight of the hydrogen molecule by 1 we must represent that of its atom by 0.5. This, however, is inconvenient, so we represent the relative weight of a hydrogen atom by unity and, consequently, the relative weight of its molecule becomes 2. Hence we have the *specific gravity* of chlorine = 2.449 (air = 1); the *density* of chlorine = 35.18, that of air = 14.37 (hydrogen = 1) while the *molecular weight* of chlorine = 70.36 and that of hydrogen = 2. This is often expressed by saying that 'the density of a gas is half its molecular weight.' The method of determining molecular weight described above is fundamental and is termed the *vapor density method*. Some substances furnish apparent exceptions to the rule that the molecular weight of a gas is double its density. One of the most important examples is ammonium chloride. This salt, from its chemical properties, has the formula NH_2Cl_4, with molecular weight = 14 + 4 + 35.18 = 53.18. The density of the vapor obtained under ordinary conditions is, however, 13.29 instead of 26.59, as would be expected. Closer study shows that the vapor consists not of ammonium chloride, but of a mixture of equal molecular proportions of ammonia, NH_3, and hydrochloric acid, HCl. These gases, when cooled, reunite to form ammonium chloride. In terms of Avogadro's hypothesis, one volume of ammonium chloride vapor would contain x molecules which are 26.59 times heavier than hydrogen. The same volume of a mixture of hydrochloric acid and ammonia gases would, how-

ever, contain only $\frac{x}{2}$ molecules of each of these substances. The molecule of the former is 18.09, and that of the latter 8.5 times heavier than hydrogen, but the number of molecules of each which is present is only half the number of the original molecules of ammonium chloride, i.e., each fills only half the total volume, the weight of one volume of mixed gases will be $\frac{18.09 + 8.5}{2} = 13.29$, which is the density actually found. Further work has shown that ammonium chloride which has been carefully dried for many weeks gives the normal density when vaporized, showing that when every trace of moisture is excluded the chloride is *not* dissociated into hydrochloric acid and ammonia. The majority of substances which are known cannot have their molecular weight determined by the method described above because, when heated they decompose, before passing into gas. The molecular weights of such bodies are determined usually by the *freezing point* or *boiling point* methods, which are also termed, more correctly, the *cryoscopic* and *ebullioscopic* methods, respectively. It is well known that when one substance is dissolved in another the freezing or solidifying point of the latter is lowered. The fact that sea-water freezes at a lower temperature than fresh water is the most familiar example of this rule. Experiment has shown that the freezing point of a given solvent is lowered to approximately the same extent by dissolving in it different substances in equimolecular proportion. Thus the same effect on the freezing point is produced by 58.5 parts of sodium chloride, NaCl, as by 74.5 parts of potassium chloride, KCl, or 80 parts of ammonium nitrate, NH_4NO_3, etc. The quantities given are proportioned to the molecular weight of these substances. The method having been tested by means of compounds which can be vaporized without decomposition and having been found to be valid is applied to such bodies as the salts mentioned above and to many other substances which cannot be volatilized or which decompose when heated. Even this method is not sufficient for the chemist's purpose, because there are many materials which do not dissolve to a sufficient extent in any solvent at its freezing point. The boiling point method extends the possibility of molecular weight determinations still further. Just as the *freezing point* of a solvent is *lowered*, so its *boiling point* is *raised* by solution in it of equimolecular proportions of substances. A detailed description of these methods of molecular weight determination would, of course, be out of place here. It will suffice to state that the solutions under examination must be very dilute, in order to avoid disturbing influences of various kinds, consequently the changes of temperature which are obtained amount

only to a few tenths of a degree on the thermometer. It is, of course, to be understood that, for any individual substance, a solvent must be selected which is without chemical action upon it.

There are other methods of determining molecular weight, but they are not in general use in consequence of their complexity, because of their limited application, or on account of the experimental difficulties which they involve. For their description and for further details regarding the methods described above, some good book on physical chemistry, such as Walker's *Physical Chemistry,* should be consulted.

MOLECULE, n. *mŏl'ĕ-kūl* [F. *molécule,* a particle of matter or air—from mid. L. *molec'ŭla,* a molecule—from L. *mōlēs,* a mass]: minute mass; one of the elementary particles into which all bodies are supposed to be resolvable; the smallest possible part of a body existing in a free state which can be broken up only into atoms of a different nature—thus, 'hydrogen' in a free state exists in pairs of atoms, each pair being called a molecule (see ATOM; ATOMIC THEORY; ATOMIC WEIGHTS; CHEMISTRY; ELEMENTS, CHEMICAL; MATTER; VORTEX). MOLECULAR, a. *mō-lĕk'ū-lĕr,* pertaining to or consisting of molecules. MOLEC'ULAR'ITY, n. *-lăr'ĭ-tĭ,* the state of being molecular; the state of consisting of molecules. MOLECULAR ATTRACTION, that force or power by which the particles or molecules that compose a body are kept together in one mass.

MOLE-RAT (*Spalax* or *Aspalax*): genus of rodent quadrupeds of family *Muridæ,* having teeth almost like those of rats, but in many respects resembling moles—e.g., in general form, shortness of limbs, concealment of ears, smallness or even rudimentary condition of eyes, and burrowing habits—though their food is altogether different, consisting wholly of vegetable substances, chiefly roots. One species (*S. typhlus*) inhabits southern Russia and parts of Asia. It is known also as the *Podolian Marmot, Blind Rat, Slepez, Zemni,* etc. The mole-rat makes tunnels and throws up hillocks like the mole, but its hillocks are much larger.—Another species, in the Malayan archipelago, is as large as a rabbit.—Nearly allied is the COAST RAT or SAND MOLE of South Africa (*Bathyergus maritimus*), also as large as a rabbit, with other species of the same genus, also natives of South Africa, which drive tunnels through the sandy soil, and throw up large hillocks.

MOLE'SKIN AND COR'DUROY: varieties of FUSTIAN (q.v.), which generic term includes also velveteen, velveret, thick-set, thick-set cord, beaverteen, and other stout cotton cloths for men's apparel—a class of goods largely manufactured in Lancashire, England. For the general structure of these fabrics, see FUSTIAN: VELVET. They all are in fact of the nature of velvet, with a *nap* or *pile* on the surface; and most of them are twilled.

When cloth of this kind leaves the loom, its surface is covered with loops like Brussels carpet, and these are cut open with a ripping-knife of peculiar shape, which the operatives learn to use with great dexterity. The hairy and uneven appearance which the cloth acquires in this operation is subsequently improved by the shearing process. The cloth is next steeped in hot water, for riddance of the paste used in dressing the yarn, and is then ready to be passed through the brushing or teaseling machine, which consists of blocks of wood with concave surfaces covered with card-brushes, working forward and backward in a lateral direction against wooden rollers encased in tin-plate, over which the cloth passes. The tin-plate is made rough with the burs of punched holes. In the next operation, the fustian is singed by passing the nap side quickly over a red-hot metal cylinder. The brushing and singeing are repeated three and occasionally four times, to give the cloth a smooth appearance. It is then washed, bleached with chloride of lime, and dyed—usually of some shade of olive, slate, or other quiet color.

The different names given to fustian cloths depend on their degree of fineness and the manner in which they are woven and finished. Thus, smooth kinds, of strong twilled texture, are called *moleskins* when shorn before dyeing, and *beaverteens* when cropped after dyeing. Corduroy, or king's cord, is produced by a peculiar disposition of the pile-threads. In all fustians, there is a warp-and-weft thread, independent of the additional weft-thread forming the pile; but in corduroys, the pile-thread is only 'thrown in' where the corded portions are, and is absent in the narrow spaces between them.

The increased price of cotton, and the introduction of cheap woolen fabrics, have recently much curtailed the use of the various fustian cloths, though they are still largely worn by some classes of mechanics and laborers.

MOLEST, v. *mō-lĕst'* [F. *molester*—from mid. L. *molestārĕ*, to molest: L. *molestus*, troublesome, offensive: It. *molestare*]: to disturb, trouble, or vex; to annoy; to render uneasy. MOLEST'ING, imp. MOLEST'ED, pp. MOLEST'ER, n. *-ėr*, one who molests. MOLESTATION, n. *mŏl'ĕs-tā'shŭn*, annoyance; uneasiness given; disturbance: in *Scotch law*, disturbance of the possession of heritage—an action for molestation being the remedy for the trespass. MOLESTFUL, a. *mō-lĕst'fûl*, troublesome.—SYN. of 'molest': to tease; inconvenience; incommode.

MOLESWORTH, *mōlz'worth*, Sir GUILFORD LINDSEY: English civil engineer: b. Milbrook, Hampshire, 1828, May 3. He studied at King's School, Canterbury, and at Putney College of Civil Engineers; was apprentice to the chief engineer of the London & Northwestern railway; was employed at Woolwich arsenal during the Crimean war; went to Ceylon 1859, becoming director-

general of railways there in 1867; and in 1871 was appointed consulting engineer to the government of India. He received decorations for his services in the Afghan and Burma wars, and retired in 1889. He wrote a standard *Pocket-Book of Engineering Formulæ*, various other works on technical subjects, *Imperialism in India* (1885); *Reason and Instinct in Ants* (1886); a prize essay *Silver and Gold* (1891); etc.

MOLESWORTH, Mary Louisa Stewart: English writer of juvenile stories: b. Holland 1842. In 1861 she was married to Major Molesworth of the Royal Dragoons. Her earlier writings were novels under the pen-name 'Ennis Graham'; she wrote her first children's stories about 1875 and gained an immediate success. Her more famous titles are: *Carrots* (1876); *The Green Casket* (1890); *Meg Langholme* (1897); *The Laurel Walk* (1898); *The Grim House* (1899); *This and That; The House That Grew*, and *Peterkin*. Among her later novels are *Hathercourt Rectory; The Red Grange*.

MOLESWORTH, *mōlz'worth*, Sir William, Right Honorable (eighth baronet): English statesman: 1810, May 23—1855, Oct. 22; b. London; lineally descended from an old Cornish family of large possessions (the first baronet was president of the council in Jamaica in the time of Charles II., and subsequently governor of that island). His university career at Cambridge was cut short by his sending (under great provocation) a challenge to his tutor to fight a duel. He continued his education at the University of Edinburgh, and subsequently at a German university. After making the usual tour of Europe, he returned home, and threw himself 1831 into the movement for parliamentary reform. Next year, though only just of age, he was elected member of parliament for Cornwall (East). He sat for Leeds 1837-41, and then remained out of parliament four years. He was the intimate friend of Bentham and James Mill, and was regarded as the parliamentary representative of the 'philosophical radicals.' In 1839, he commenced and carried to completion, at a cost of not less than £6,000, a reprint of the entire miscellaneous and voluminous writings of Hobbes, the 'Philosopher of Malmesbury.' The publication did him great disservice in public life, his opponents ascribing to him the freethinking opinions of Hobbes in religion, as well as the philosopher's conclusions in favor of despotic government. In 1845, he was elected for Southwark (which he continued to represent until his death), and entered on a parliamentary career of great energy and usefulness. He was the first to call attention to abuses in the transportation of criminals; and as chairman of a parliamentary committee he brought to light all the horrors of the convict system. He pointed out the maladministration of the colonial office, explained the true principles of colonial self-government, prepared

draught constitutions for remote dependencies, and investigated the true and natural relations between the imperial government and its colonial empire. 1853, Jan., he accepted the office of first commissioner of public works, in the administration of the Earl of Aberdeen; and 1855 the post of secretary of state for the colonies, in that of Viscount Palmerston; but died before he could give proof of his administrative capacity in the latter office. He established the *London Review*, a new quarterly, 1835; and afterward purchased the *Westminster Review*, organ of the 'philosophical radicals.' The two quarterlies were then merged into one, under the title *London and Westminster*.

MOLE-TRACK: See under MOLE 3.

MOLFETTA, *mōl-fĕt'tâ:* city of southern Italy, province of Bari, on the Adriatic, 18 m. n.w. of Bari. The neighborhood yields excellent fruits, especially almonds and oranges, and has extensive olive plantations. Fish abound along the coast. The city contains a magnificent cathedral, and is partly inclosed by walls; it is conjectured that it occupies the site of some early forgotten town, from the numerous vases, urns, and other relics of antiquity found in its vicinity. Pop. 40,000.

MOLIÈRE, *mo-le-är'*, JEAN-BAPTISTE (properly JEAN-BAPTISTE POQUELIN—the name Molière not having been assumed till he went upon the stage): one of the greatest—probably the greatest of all writers of social comedy: 1622, Jan.—1673, Feb. 17; b. Paris; son of Jean Poquelin, upholsterer, who subsequently became a valet-upholsterer to the king. Regarding the boyhood of Molière, almost nothing is known, but his credulous biographers have put together whatever traditionary gossip they could find floating on the breath of society. Voltaire, while recording these *contes populaires*, as he calls them, pronounces them *très-faux*. All that we really are certain of is, that in his 14th year he was sent to the Jesuit *Collége de Clermont* in Paris, where he had for a fellow-student Prince Armand de Conti, and that, on his leaving the collége, he attended for some time the lectures of Gassendi. He was charmed, we are told, by the freedom of thought permitted in speculative science, and; in particular, conceived a great admiration for Lucretius, the Roman poet-philosopher, whom he undertook to translate. Of this translation, only a single passage remains, intercalated in the *Misanthrope* (act ii. scene 4). About 1641, he commenced the study of law; but the statement of Tallemant des Réaux, that he actually ventured into the precincts of theology, is generally rejected. Molière detested priests. So gay, humorous, and sharp-eyed a humanitarian would have felt quite miserable under the restraints of a monkish life. In 1643 he appeared on the stage as member of a company of players, which took the name *Illustre Théâtre*. This

company, of which he was the principal organizer, appeared first at Rouen during the autumn of 1643, and in January of the following year in Paris. It existed until 1645, Aug., when Molière was imprisoned in the Grand Châtelet for its debts. He was released soon after and fled to the provinces, where he organized a troupe of strolling players. For the next 12 years, we can catch only an occasional glimpse of him. He was playing at Albi and Curcusonne 1647, Nantes 1648, at Toulouse 1649, Narbonne 1650, at Lyon 1653 (where his first piece, *L'Etourdi,* comedy of intrigue, was brought out), at Pézénas 1653-4, at Montjullier, Lyon and Narbonne 1655, at Grenoble during the carnival, and at Rouen during the spring and summer of 1658.

During these now obscure peregrinations, he seems, though an industrious actor, to have been also a diligent student. He read Plautus, Terence, Rabelais, and the Italian and Spanish comedies, besides—without which, indeed, all the rest would have been of little avail—making a constant use of as quick eyes as ever glittered in a Frenchman's head. At Paris, by the recommendation of friends he had made in the provinces, among whom was probably Pierre Mignard the punster, Molière got permission to act before the king, who was so highly pleased that he allowed his company to establish itself in the city under the title of the *Troupe de Monsieur,* conveying the idea of a sort of royal patronage. In 1659 Molière brought out *Les Précieuses Ridicules,* the fine satire of which —lapsing at times, however, into caricature—was instantly perceived and relished. '*Courage, courage, Molière!*' an old man is said to have cried on its first representation; '*voilà la bonne comédie.*'* The old man was a prophet. Good comedy dated in France from that night. Ménage, the critic, is reported to have said to Chapelain, the poet, as they were going out of the theatre: 'Henceforth (as St. Remi said to Clovis), we must burn what we have worshipped, and worship what we have burned.' In 1660 appeared *Sganarelle, ou le Cocu Imaginaire;* and in 1661, '*L'Ecole des Maris*'—founded partly on the *Adelphi* of Terence, in which Molière completely passes out of the region of farce into that of pure comic satire —and *Les Facheux.* In the following year, Molière married Armande-Grésinde Béjart, either sister or daughter (for it is still undetermined) of Madeleine Béjart, who was an actress of his troupe, with whom he had formerly lived in what the French politely call 'intimate relations.' There is, however, little ground for the revolting calumny freely circulated even in Molière's lifetime regarding his marriage. Although his marriage was an unhappy one, his literary activity continued as brisk as before. Among several pieces belonging to this year, the most celebrated

* The sentence as given by Demarest, Molière's first biographer, is 'Courage, courage, Molière, voilà la bonne comédie.'

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is *L'Ecole des Femmes*, which excited violent indignation among the clergy and the devout, for its supposed caricature of religious mysteries. Molière defended himself with incredible audacity in his *Impromptu de Versailles*. *Le Tartuffe*, three acts of which were written 1664, was prohibited from being brought on the public stage; but Molière was invited by the king to read *Le Tartuffe* before the papal legate, Chigi, and six weeks later his majesty permitted the three acts then finished to be performed before the Duc d'Orléans at Villers-Cotterets. In 1665, Louis XIV. bestowed a pension of 6,000 livres on Molière's company, which now called itself *Troupe du Roi*. Next year appeared *Le Misanthrope*, most artistic of all his comedies; soon followed by *Le Médecin Malgré Lui*. When *Tartuffe* was at last brought on the stage, 1669, it obtained a superb success. The truth, the variety, the contrast of the characters, the exquisite art in the management of the incidents, the abundance of the sentiments, and the wonderful alternations of feeling—laughter, anger, indignation, tenderness, make this, in the opinion of most critics, Molière's masterpiece. To the same year belongs *L'Avare*. In 1670 appeared *Le Bourgois Gentilhomme*, a pleasant satire on a prevalent vice among wealthy tradesmen in the France of that day—the vulgar ambition to pass for fine gentlemen. Then came *Les Fourberies de Scapin* (1671), followed by *Les Femmes Savantes* (1672), full of admirable passages; and *Le Malade Imaginaire* (1673), the most popular, if not the best of all Molière's comedies. While acting in this piece, he was seized with severe pains, which, however, he managed to conceal from the audience; but on being carried home hemorrhage ensued, and he expired at ten o'clock at night. As Molière had died in a state of excommunication, and without having received the last aids of religion—which, however, he had implored—the archbishop of Paris refused to let him be buried in consecrated ground; but the king interfered—a compromise was effected, and he was privately interred in the cemetery of St. Joseph, being followed to the tomb, as a letter said to be by an eye-witness declares, by 'no procession, except three ecclesiastics, four priests who bore the body, * * * six children in blue, who carried candles in silver holders, and * * * lackeys with burning torches of wax. * * * There was a great crowd.' The place where the body lies is unknown. In 1792 Molière's supposed remains were transferred to the Museum of French Monuments, whence they were removed to Père-la-Chaise 1817; but the tomb that was opened appears not to have been that of Molière. In his private character Molière was gentle, generous, and agreeable.—Among the best editions of Molière's works are those of Auger (1819-25), Aimé-Martin (1833-6), Moland (1871), and Despois and Mesnard (1873 *et seq.*). A complete but indifferent English translation of Molière's works is

that by Van Laun, 6 vols. (Edin. 1875-6). The best French biographies are by Taschereau (1825-7) and Paul Mesnard (1889). See the excellent *Bibliographie Molièresque* of Paul Lacroix (1875). English biographies are: *The Life of Molière,* by Henry M. Trollope (London and New York 1905), and *Molière,* a biography by H. C. Chatfield-Taylor (New York 1906, London 1907).

MOLINA, *mo-lē'nâ,* Luis: Spanish Jesuit theologian: 1535-1600, Oct. 12; b. Cuença, in New Castile. He entered the Jesuit Society in his 18th year, studied at Coimbra, and was appointed professor of moral theology at Evora, where he taught for 20 years. He died at Madrid. Molina's celebrity is mainly confined to the theological schools. His principal writings are a commentary on the *Summa* of St. Thomas (Cuença, 2 vols. 1593); a minute and comprehensive treatise *On Justice and Right* (Cuença, 6 vols. 1592; reprinted Mainz 1659); and the celebrated treatise, *The Reconciliation of Grace and Free-will,* Lisbon 1588, with appendix 1589. To the last-named work mainly Molina's celebrity is due.—See Molinism.

MOLINARI, *mō-lē-nâ-rē,* Gustave de: Belgian political economist: b. Liège, Belgium, 1819, Mar. 3. He studied medicine and became a homœopathic physician in Brussels, but later he entered journalism in Paris. His radicalism compelled him to return to Belgium upon the accession of Napoleon III., and he became professor of political economy in the Musée Royal d'Industrie Belge. In 1881 he returned to Paris and edited the *Journal des Economiste* and later founded the journals *L'Economiste Belge* and *La Bourse du Travail.* Among his books are: *Etudes économiques* (1846); *Cours d'Economie politique* (1861); *L'Evolution économique* (1880); *Comment se resoudra la question sociale* (1896); etc.

MOLINE, *mō-lēn':* Ill., city in Rock Island county; on the Mississippi river, and on the Chicago, R. I. & P., the Chicago, B. & Q., and the Chicago, M. & St. P. railroads; about three miles east of Rock Island, nearly opposite Davenport, Ia., and about 155 miles west of Chicago. In the part of the river between Moline and Davenport is an island from which to the shore have been built dams to secure water-power. Moline has good water-power, which is utilized in developing the manufacturing industries. The extensive coal fields in the near vicinity contribute to the industrial development of the city. The chief manufactures are wagons, carriages, agricultural machinery, steel, foundry and machine-shop products, steam engines, saw- and planing-mill products, pumps, paper, flour, and dairy products. Some of the prominent buildings are a library building, which cost $50,000, a city hospital, several fine church and school buildings. The city library was founded in 1892 and contains about 10,000 volumes. There is a good library connected with the high school. The city owns and operates the waterworks. Pop. (1900) 17,248.

MOLINELLA, *mō-lē-nĕl'lâ:* town of Italy, province of Bologna, about 30 m. n.e. of the city of Bologna. The first houses were on islands in the Po, but with the gradual change of the river to its present bed, and the union of the islands, M. has grown in importance. It carries on hemp manufacture, and is a centre of the cheese trade. The buildings are substantial, and the river-side, which was the original location of the town, is now several m. distant. Pop. about 11,000.

MOLINISM, n. *mō'lĭn-ĭzm:* in Rom. Cath. doctrine, system taught by Luis Molina (q.v.), Spanish Jesuit, concerning Divine grace and predestination. MOLINIST, follower of the system taught by Molina.—*Molinism* deals with a problem almost as old as the origin of human thought. It had already led, in the 4th c., to the well-known PELAGIAN CONTROVERSY (see PELAGIUS). In reconciling with the freedom of man's will God's predestination of the elect to happiness, and of the reprobate to punishment, M. asserts that the predestination is consequent on God's foreknowledge of the free determination of man's will; therefore, that it in no way affects the freedom of the particular actions, in requital of which man is predestined whether to punishment or to reward. God, in M.'s view, gives to all men sufficient grace whereby to live virtuously and merit happiness. Certain individuals freely co-operate with this grace; certain others resist it. God foresees each course, and this foreknowledge is the foundation of one or of the other decree. This exposition, which somewhat resembles that of Arminianism (see ARMINIUS, JACOBUS) in Protestantism, was probably in accord with the prevalent feeling in the Rom. Cath. Church at that time, and was commended by its antagonism to the teachings of some prominent Prot. reformers. But it was at once assailed in the schools on two grounds—first, as a revival of the Pelagian heresy, inasmuch as it appears to place the efficacy of grace in the consent of man's will, and thus to recognize a natural power in man to elicit supernatural acts; second, as setting aside altogether what the Scriptures represent as the special election of the predestined, by making each individual, according as he freely accepts or refuses the grace offered to all in common, the arbiter of his own predestination or reprobation. Hence arose the famous dispute between the MOLINISTS and the THOMISTS. It was first brought under the cognizance of the inquisitor-gen. of Spain, by whom it was referred to Pope Clement VIII. This pontiff, 1598, appointed the celebrated congregation, *De Auxiliis*, to consider the entire question; but notwithstanding many long discussions, no decision was arrived at during the life-time of Clement; and though the congregation was continued under Paul V., the only result was a decree, 1607, permitting both opinions to be taught by their respective advocates, and prohibiting each party from accusing its adversaries of heresy. Also attempts were made to bring under control the publication of commentaries on Thomas Aquinas.

The dispute, in some of its leading features, was revived in the Jansenist controversy (see JANSEN, CORNELIUS); but with this striking difference, that whereas the rigorous Jansenists denied the freedom of the will when acted on by efficacious grace, all the disputants in the scholastic controversy—even the Thomists—maintain that, in all circumstances, the will remains free, though they may fail to explain how this freedom is secured under the action of efficacious grace. See AQUINAS. —M. has been commonly taught in the Jesuit schools; but a modification of it was introduced by the celebrated Spanish divine, Suarez (q.v.), in order to save the doctrine of *special election*. Suarez held, that though God gives to all men grace absolutely sufficient for their salvation, yet he gives to the elect a grace which is not alone in itself sufficient, but which is so attempered to their disposition, their opportunities, and other circumstances, that they infallibly, though yet quite freely, yield to its influence. This modification of Molina's system is called CONGRUISM. M. must not be confounded either with Pelagianism or semi-Pelagianism, inasmuch as M. distinctly supposes the inability of man to do any supernatural act without God's GRACE (q.v.).

MOLINO DEL REY, *mō-lē'nō dĕl rā*, BATTLE OF: brilliant engagement in the Mexican war. The massive structures from which the battle received its name were of stone and had been used successively as flour-mills and foundries, when Santa Anna employed them as a fortress from which to defend the castle of Chapultepec, half-a-mile distant and six m. from the city of Mexico. The U. S. forces, about 10,000 men, had won the battles of Contreras and Churnbusco, and were near the castle of Chapultepec, when an armistice was arranged and a commissioner of the U. S. govt. endeavored to effect a settlement of the difficulties with the Mexican authorities. His efforts proving ineffectual, hostilities were resumed; and 1847, Sep. 8, the Americans attacked M., which, after a desperate resistance by a force superior in numbers, surrendered the same day. This battle had an important bearing on the future of the war, as it opened the way to the speedy capture of Chapultepec and to the occupation of the city of Mexico by U. S. troops.

MOLINOS, *mo-lē'nōs*, MIGUEL DE: Spanish Rom. Cath. priest, advocate of a phase of Quietism (see QUIETISTS): 1627, Dec. 21—abt. 1696; b. Patacina, Aragon; of noble parentage. He received holy orders and was educated at Pampeluna, and afterward at Coimbra, at which univ. he obtained his theological degree. After gaining distinction in his native country, M. went to Rome, where he soon acquired high reputation as a director of conscience and a master of the spiritual life. His private character was in keeping with this reputation. He steadily declined all ecclesiastical preferment, and confined himself entirely to his duties in the confessional and in

the direction of souls. An ascetical treatise which he published, *The Spiritual Guide*, added largely to the popularity which he had acquired in his personal relations: but there were not wanting many who, in the visionary principles of this work, discerned what they deemed the seeds of a seductive error. Among these, the celebrated preacher, F. Segneri, was the first who ventured publicly to call them into question; but his strictures were by the friends of M. ascribed to jealousy of the influence which M. had acquired with the people. By degrees, however, reports unfavorable to the practical results of this teaching, and even to the personal conduct and character of M., or of his followers, began to find circulation; and eventually, 1685, he was cited before the Holy Office, and submitted to close imprisonment and examination. In addition to the opinions contained in his book, a prodigious mass of papers and letters, to the number, it is said, of 20,000, found in his house, were produced against him, and he was himself rigorously examined as to his opinions. The result of the trial was a solemn condemnation of 68 propositions, partly extracted from his *Spiritual Guide*, partly, it appears, drawn from his papers or his personal professions. These doctrines M. was required publicly to abjure, and he was sentenced to close imprisonment, in which he is believed to have been detained until his death. The opinions imputed to M. may be described as an exaggeration of the most visionary and enthusiastic principles of QUIETISM (see QUIETISTS). According to the propositions condemned by the Inquisition, M. pushed to such an extreme the contemplative repose which is the common characteristic of Quietism, as to teach the utter indifference of the soul, in a state of perfect contemplation, to all external things, and its entire independence of the outer world, even of the actions of the very body which it animates; whence it was logically inferred that he taught that this internal perfection is even compatible with the worst external excesses. These consequences are not openly avowed in *The Spiritual Guide*, but they appear deducible in some sort from some of its maxims, and the accusation was that they were plainly contained in the papers of M., produced at his trial. The report was that they were even admitted by himself. It is to be considered, however, that visionary or dangerous as his extreme views may have been, they would at least have been sufficiently commended to the detestation of his Jesuit opposers by their emphasis on the inward rather than on the outward; by M.'s disregard of external mortifications; and by his advice to monks and nuns to lay aside images and relics of saints, in order to worship God in spirit and in the quietness of the inmost soul. After the death of M., no further trace of his teaching appears in Italy, but it was revived in more than one form in France.—See John Bigelow's *Molinos, the Quietist* (N. Y. 1882).

MOLISE, *mo-lē′sā:* former province of Italy: see CAMPOBASSO.

MOLLAH, n. *mŏl′lă* [Ar. *maula;* Turk. *molla*—from *walai*, to rule]: among the Turks, title of a superior order of judges. The Mollahs are divided into two classes: the first class—four in number, from whom the Mollahs at the court of the Padishah are elected—possesses jurisdiction over the more important pashaliks (Adrianople, Brusa, Damascus, Cairo); and the second—holding their office for only a lunar month at a time, and the lowest rank of whom is formed by the naibs—over the inferior provinces, towns, and villages. The M. is an expounder of civil and criminal law, and of the religion of the state; he is therefore necessarily both lawyer and ecclesiastic. Under him is the Cadi or judge, who administers the law, and superior to him are the Kadhiasker and the Mufti (q.v.). They all are subject to the Sheikh Al Islam or supreme Mufti. In Persia, the office of M. is similar to what it is in Turkey; but his superior is there the 'Sadr,' or chief of the Mollahs. In the states of Turkestan, the Mollahs have the whole government in their hands.

MOLLASSE′: see MOLASSE.

MOLLE, n. *mŏl′lĕ* [L. neut. sing. of *mollis*, soft]: in *mus.*, term applied in mediæval music to B flat as opposed to B natural, which was called B durum. Hence, the term came to signify major and minor mode, as in the German, e.g., A dur, the key of A major; A moll, the key of A minor. Hence, too, the French formed the word bémol, a flat.

MOLLIENT, a. *mŏl′lĭ-ĕnt* [L. *mollĭens* or *mollĭen′tem*, softening—from *mollis*, soft]: serving to soften; assuaging. MOL′LIENTLY, ad. *-lĭ*. See EMOLLIENT, under EMOLLIATE.

MÖLLER, *möl′lėr*, HENRY: 1749–1829, Sep. 16; b. Hamburg: Lutheran clergyman. He emigrated to the United States 1763; was taken into the family of the Rev. Henry M. Muhlenberg, D.D., in Philadelphia; became a teacher in the latter's school; applied his leisure to studying theol.; and was licensed to preach by the Evang. Lutheran synod of Pennsylvania. Prior to the revolutionary war, he passed his time among the poor, expounding the principles of his faith and gathering the people into congregations; and through the war he served as chaplain of a German regt. in the American army. Subsequently he held pastorates in Reading, Philadelphia, and Albany, and erected the first Lutheran church in the latter city. He preached at New Holland, Penn., 1788–95, Harrisburg 1795–1803, Albany 1803–09, and afterward was in charge of the Lutheran churches at Sharon and New Rhinebeck, N. Y.

MOLLIFY, v. *mŏl'lĭ-fī* [F. *mollifier*—from mid. L. *mollificārĕ:* It. *mollificare*, to render soft or supple, to mollify—from L. *mollis*, soft; *fīō*, I become]: to calm; to pacify; to soften; to mitigate. MOL'LIFYING, imp.: ADJ. softening; mitigating. MOL'LIFIED, pp. *fīd*. MOL'LIFIER, n. *-fī-ĕr*, one who or that which softens or appeases. MOL'LIFI'ABLE, a. *-ă-bl*, that may be softened; capable of being mollified. MOL'LIFICA'TION, n. *-fĭ-kā'-shŭn*, the act of mollifying; the state of being mollified. —SYN. of 'mollify': to assuage; appease; quiet; qualify.

MOLLITIES, n. *mō-lĭsh'ĭ-ēz* [L. *mollĭtĭēs*, softness]: in *med.*, a diseased softening of an organ, or part of an organ. MOLLITIES OSSEUM, or OSTEOMALAKIA, an obscure disease of the nutritive cells of the bones, which renders them soft, fragile, and unable to sustain the weight of the muscles. In the progress of the disease, the various earthy substances which give strength to healthy bones are diverted from their proper use and to a great extent are eliminated from the system through the action of the kidneys. The diseased bones consist largely of gelatine and are easily bent; their extremities become enlarged, and fractures which do not readily heal frequently occur. After death the bones are soft, light, and brittle, and of a color between red and brown, but when thoroughly dried they become transparent. Frequently cavities are found. These are filled in some cases with an oily fluid, in others they contain clear serum. Some investigators regard this as the result of the conversion of the bony substance into medullary matter; others look upon it as a malignant formation. In the majority of cases all the bones are affected, but those of the head sometimes escape. In its first appearance the disease resembles rheumatism, but it can soon be distinguished by the excessive quantity of phosphatic matter in the urine. It is very painful and the patient becomes unable to either stand or sit erect. It seldom attacks a person under 20 years of age, and a large proportion of its subjects are females. Owing to the diseased condition of the organs of nutrition and assimilation, the natural method of supplying the system with the phosphates and other substances which are deficient in the bones is of no avail. Tonics in the first stages, and stimulants, with opiates to produce sleep, in later stages, are the ordinary remedies, but the disease—fortunately rare—usually advances to a fatal termination.

MOLLUSCA.

MOLLUS'CA: one of the great phyla or subkingdoms of the animal kingdom, forming a well-characterized and on the whole homogeneous group of the invertebrate division of Zoology. The M. are placed by most zoologists between the worms and the arthropods (crustaceous insects). By some they are considered an offshoot of the worms, and there is, in some respects, a strong similarity in the developmental history of the two subkingdoms. The M. are somewhat related to the Vertebrata through the Cephalopoda, where the brain is protected by a cartilaginous covering and the eye and nervous system are highly developed. In 1748 Linnæus placed the shell-bearing Mollusca in his third order of his class Vermes and called them Testacea, while the naked M. were placed in his second order, called Zoophyta. In 1758 he changed the name Zoophyta to Mollusca, though this group consisted principally of animals not true Mollusca. The term Mollusca was first definitely applied to this group of animals by George Cuvier, in 1788, but included also the Brachiopoda (lamp-shells), the Ascidians (Tunicata) and the Cirripedia (barnacles). The latter group was removed from the M. in 1830 by J. Vaughan Thompson, who proved their close relationship with the Crustacea. In 1866 a Russian embryologist named Kowalewsky demonstrated the relationship of the Tunicata with the Vertebrata. From 1830 to 1882 the Brachiopoda were studied by various investigators, who demonstrated their relationship with the Polyzoa (sea-mats); they are now included in the subkingdom Molluscoidea.

As now restricted the M. embraces a wonderfully homogeneous group of the animal kingdom, characterized by unsegmented bilaterally symmetrical bodies; the symmetry in some groups, however, being obscured or lost by a torsion or twisting of the body to form a spiral. The body of the mollusk is very soft and fleshy, whence their name, derived from the Latin word Mollis. A hard, calcareous shell or exoskeleton is present in the majority of M. and is developed from a shell gland which is always present in the larval M. The soft body of the animal is closely molded to the shell, to which it is attached by one or more muscles. The shell serves as a means of protection to the soft body of the animal which may usually be withdrawn completely within it. The M. are further distinguished by the presence of mucous glands which secrete a peculiar slimy fluid which covers the body of the animal and which, in the land snails particularly, appears as a glistening, sticky track when the snail crawls over the surface of any object. The creature is covered with a tough skin or mantle, upon the surface of which the shell is formed by means of certain epithelial cells which secrete carbonate of lime (calcite or aragonite). The shell increases in size by the addition of new matter to the outer margin of the shell. On account of the presence of this testaceous shell in the majority of Mollusca the group

often bears the name of *Testacea*. In many of the M., the shell is composed of a single piece, usually a spiral tube closed at one end, and gradually increasing in size toward the open extremity from which the animal is able to protrude itself. Shells of this description are commonly called *univalves*. In others, the shell is composed of two pieces or valves, attached to each other at one point by a hinge furnished with an elastic ligament that serves to open the valves, when it is not opposed by the action of the *adductor* muscles, whose office it is to keep the shell closed. Shells of this kind are termed *bivalves*. These differences in the character of the shell correspond with differences in the conformation of the animals inhabiting them. The bivalve M. exhibit no traces of a head, and hence are termed *Acephalous* M.; while the univalves have a distinct head, provided with organs of the special senses; hence, by way of distinction, some writers have termed them *Cephalophora* (or head-bearing). The shell of a third group of M., the Chitons, is composed of eight pieces or valves. Shells of this kind have hence been popularly caled *multivalves*. Many M. are altogether unprovided with a shell, or have only a small calcareous plate embedded within the mantle. These are termed *naked* M. Many univalves are provided with a horny or calcareous *operculum* which is attached to the foot and which closes the aperture of the shell when the animal withdraws into it. It is worthy of notice that the young mollusk, while still in the egg, is almost always furnished with a delicate pellucid shell, even when it is ultimately to be naked, in which case the embryonic shell is cast off soon after the animal makes its escape from the egg. For the mode of formation, etc., of the shell see SHELL.

Locomotion in many of the M. is executed by means of a muscular structure developed in the middle of the ventral surface of the body, and termed the *foot*. In some (the Gastropoda) the foot forms a sort of flattened disk by the alternate contraction and expansion of different parts of which the animal can slowly crawl forward; while in others (the free-moving bivalves) it is a tongue-like organ, which can be protruded between the valves and with which the mollusk ploughs its way through the sand or mud. In some pelecypods the foot, by its sudden extension, after being previously bent upon itself, enables its possessor (the common cockle, e.g.) to take considerable leaps. The foot is also the agent by means of which certain species burrow in the sand or mud, and others bore into the solid rock. Many M., however, are firmly attached to a single spot, except during their larval state; and as they do not require a foot, we find it either altogether undeveloped (as in the oyster), or serving to support a glandular organ, from which filaments of silky or horny matter (called the *byssus*) are secreted, which serve to attach the animal (the common mussel, e.g.) to rocks, stones, etc. beneath the water. Many of the

M. present modes of locomotion altogether independent of a foot; some bivalves possess a branchial or respiratory chamber, into which water is drawn, and again expelled by muscular action, a recoil being thus produced which serves to drive the animal through the water; the *Pteropoda* (q.v.), furnished with a pair of broad flattened fins (which are processes of a modified foot) at the sides of the head, by means of which they swim with moderate rapidity; the Heteropoda, in which the foot becomes a vertical compound fin, and the Cephalopoda, in which the posterior part of the body is provided with a pair of fins in addition to the funnel or tube through which water is violently ejected to force them in a backward direction. In this class the head is surmounted by a circle of arms or tentacles, which serve as organs of locomotion as well as organs of prehension for the capture of prey.

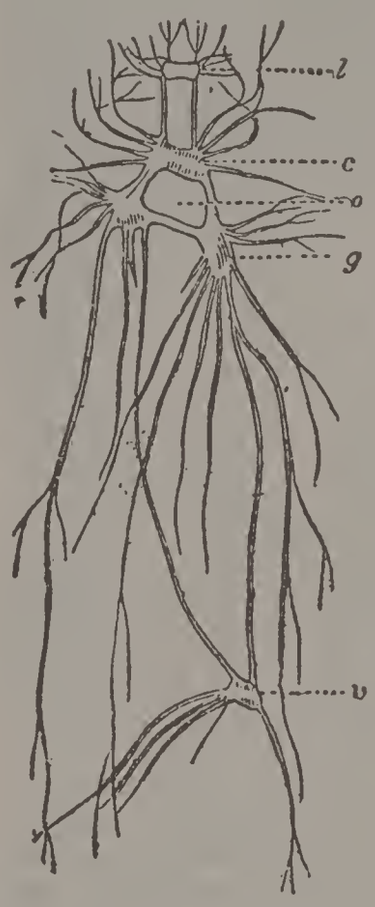


Fig. 1.—Nervous system of the Aplysia, a Gastropodous Mollusk.

c, cerebral ganglia; *g*, pedal ganglia; *o*, nervous collar surrounding the esophagus; *l*, labial ganglia; *v*, visceral ganglion.

The nervous system is composed of at least three pairs of nerve centers or ganglia, the cerebral, the pleural and the pedal. These three ganglia, frequently with others, as abdominal, visceral, buccal, etc., form a ring or collar surrounding the œsophagus and are connected by nerve fibres called commissures. These ganglia send off nerves which innervate all parts of the body. The cerebral, pedal and pleural ganglia are usually placed in the anterior end of the animal, but the other ganglia may be variously placed, accordingly as the commissures are long or short looped. In some spiral M. the commissures connecting the ganglia have formed a loop or figure-of-eight by the twisting of the snail in its growth. In bilaterally symmetrical M. the commissures run parallel. The cerebral and visceral ganglia are sometimes called super-œsophageal, as they lie above the œsophagus and are connected with the pedal ganglia which lie below the œsophagus. The supra-œsophageal ganglia furnish the nerves to the special organs of the senses. Most of the M. possess special *organs of touch* in the form of lips or of special lobes around the mouth; of tentacles upon the head, or of cirrhi upon other parts of the body; and in addition to these special organs, the skin appears to possess considerable sensibility.

When tentacles are present they are two or four in number. In the land snails, which possess tentacular organs, they may be retracted or protruded at pleasure, as may be seen by examining the eye tentacles or peduncles of the common snail. True organs of sight are present in the Gastropoda and Cephalopoda; in the latter they are placed at each side of the head, while in the former they are situated either on the head or on the tentacles or eye peduncles. In many of the Pelecypoda eye-like structures are developed on the edge of the mantle (e.g., Pecten, Cardium, Spondylus). In the Chitons numerous eyes or ocelli are formed on the leathery girdle which surrounds the valves of the shell.

Organs of hearing, in a simple form, are almost always present. They consist usually of round vesicles in the neighborhood of the æsophageal ring, from which they receive a nervous filament. They contain a clear fluid

Fig. 2.—Anatomy of the Snail:

a, the mouth; *bb*, foot; *c*, anus; *dd*, lung; *e*, stomach, covered above by the salivary glands; *ff*, intestine; *g*, liver; *h*, heart; *i*, aorta; *j*, gastric artery; *l*, hepatic artery; *k*, artery of the foot; *mm*, abdominal cavity, supplying the place of a venous sinus; *nn*, irregular canal in communication with the abdominal cavity, and carrying the blood to the lung; *oo*, vessel carrying the blood from the lung to the heart.

and a small concretion of carbonate of lime (Otocyst) which is sometimes roundish, and sometimes of crystalline form, and is in a perpetual state of vibration, in consequence of ciliary action in the interior of the vesicle. Organs of smell and taste in the M., are believed to be present in Spengal's olfactory organ (Osphradium) which is placed at the base of the gill.

The organs of digestion are much more fully developed in the M. than in the lower invertebrates. The alimentary canal which is usually a well-formed intestine, is always provided with two distinct openings, a mouth and an anus, the latter often (as in the Gastropoda and Pteropoda) on the right side of the anterior part of the body. In all groups excepting the Pelecypoda (clams, oysters, etc.) the mouth is provided with a peculiar armature enclosed in a rounded, muscular sac; this consists of one or more horny jaws placed on the upper wall of the œsophagus and a belt or strap of chitinous material, called the radula,

odontophore or tooth-bearer, upon which are placed many minute teeth or denticles, arranged in longitudinal rows. This radula or tongue is placed on the floor of the radula and by a rasping movement cuts off small particles of food. This organ is characteristic of and peculiar to all M. excepting the Pelecypoda. The number of teeth vary from 16 to over 10,000. The mouth, with the radula, may be placed at the end of a more or less retractile proboscis or rostrum, or it may be placed directly in the lower plane of the head. A stomach is universally present and may be simple or multiple, and may also be accompanied by a gizzard which may contain several solid, calcareous

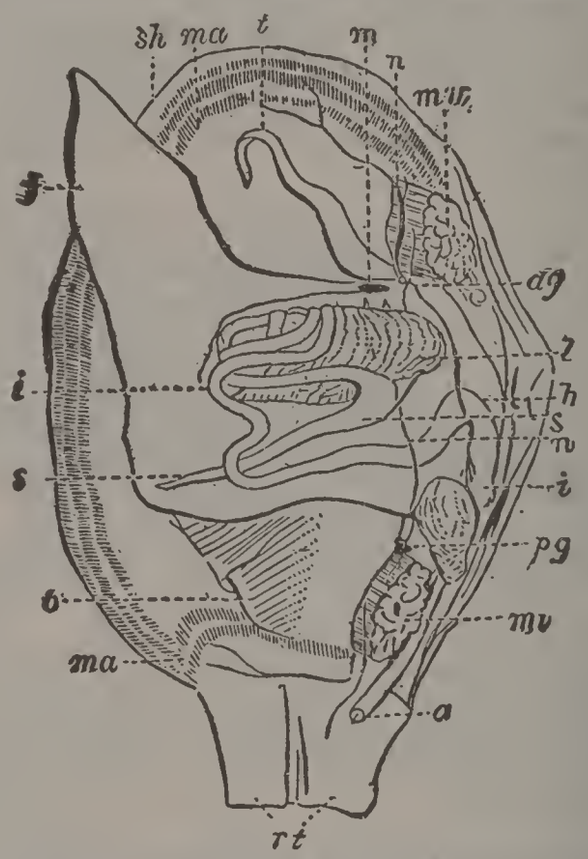


Fig. 3—Anatomy of an Acephalous Mollusk (*Mactra*):
m, mouth; *s*, stomach; *ii*, intestine; *ag*, anterior ganglia; *pg*, posterior ganglia; *mu*, adductor muscles; *a*, anus; *h*, heart; *l*, liver; *f*, foot; *sh*, shell; *ma*, mantle; *b*, branchiæ; *t*, tentacula or Cabial palpi; *r*, oral, or respiratory siphon; *t*, anal siphon.

bodies for the grinding of food particles. The liver is always present, constituting a large part of the body in the acephalous bivalve M. (as the mussel and cockle), and a still larger part in the Gasteropoda (as the snail), while in the Cephalopoda it is constructed on nearly the same plan as in fishes. Other secreting organs, such as salivary glands, pancreas, and urinary organs, also are present in the more highly developed Mollusca.

The circulation of the blood is effected by means of a distinct heart, which is aided by one or two auricles and usually communicates with a regular, closed vascular system; but in some cases the venous system is imperfect, and the blood which has been transmitted by the arteries

to the system in general is not confined within distinct vessels, but meanders through sinuses or passages excavated in the tissues, and through them it reaches the respiratory apparatus, whence it is transmitted by closed vessels (veins) to the heart. The blood is usually colorless (sometimes of light blue or green tint), and red in some snails (planorbis) and contains but few floating corpuscles. In all M., there is a distinct respiratory apparatus, which, excepting in the case of the terrestrial Gastropoda and the aquatic pulmonates (e.g., the snail), is constructed with a view to aquatic respiration, and is composed of *branchiæ*, or gills.

In some of the Pelecypoda the gills consist of a number of membranous plates (arranged like the teeth of a comb) over which the water flows. In the Gastropoda the gills or lamellæ are feather-like and are usually placed in a gill cavity inside the mantle; in some M. (the Nudibranchiates) they project from the back of the snail and are branched or feather-like. In spiral snails the twisting of the body has caused the loss of the left gill, the right gill remaining and generally occupying a median position in the respiratory cavity, which is plentifully supplied with blood-vessels. In some M. respiration takes place over the entire surface of the body. In many of the bivalves, the openings for ingress and egress of water are prolonged into tubes or siphons, sometimes of considerable length; the tube through which the water enters being termed the branchial siphon, while that through which it escapes is termed the *anal* siphon (see fig. 3). In the majority of the aquatic M., except the Cephalopoda, the renewal of the water in contact with the surface of the gills is due mainly to ciliary action. In the air-breathing gasteropodous M. (of which the snails and slugs are well-known examples), there is a pulmonary sac or bag, into which the air penetrates by an opening on the right side of the body near the neck.

There are considerable differences in the modes of *propagation* of the Mollusca.

In the majority of the Pelecypoda, or bivalve M., the sexes are distinct, although organs of copulation are not present. In the Gastropoda (snails) the sexes are usually separate; in the sea-slugs, land-snails and sea-butterflies they are united (hermaphrodites) although mutual impregnation is necessary. In the Cephalopoda the sexes are distinct. The species which have the sexes separate are called diœcious, while the hermaphroditic species are called monœcious. A few M. are said to be capable of self impregnation. The eggs vary greatly in form; in some cases, they are laid separately, but usually they are agglutinated together in a mass; while in some marine species many eggs are inclosed in a leathery capsule, while numerous capsules are united to form a large mass. The eggs of many land-snails are provided with a calcareous shell.

A few M. are ovaviviparous and bring forth their young alive, the young being retained in the oviduct until the extrusion of the young animals. Most M. pass through several peculiar larval stages, called the *trochosphere* and *veliger*. Even the attached forms (oysters, Vermetus) are free when young and swim about by means of peculiar lobes called vela. In the Unionidæ (fresh-water mussels) the larva, called a glochidium, is retained for a time in the gills of the female, which are modified to form marsupia.

The M. exhibit a rather wide variation in form, as may be seen by comparing an oyster, a snail and a devil-fish, although presenting, as stated above, a remarkable homogeneity. They are adapted to many different modes of life, some living on the land in deep valleys or on high mountains; in deserts or in the depths of the forest; some living in fresh water, others in brackish water and others in the sea; they are abundant along the tide-washed shore and extend from the littoral region, which is laid bare by the ebb of the tide, to the abyssal depths of the ocean; the rushing mountain stream has its Molluscan inhabitants, as well as the still depths of the pond and lake. Many M. are carnivorous, while others are vegetable feeders. In size the M. vary from tiny snail shells, one twenty-fifth of an inch in length, to the great clam (Tridacna gigas) of the Pacific and Indian Oceans, which measures more than a yard in diameter and weighs several hundred pounds. The M. are widely diffused through space and are found in every latitude of the earth. The Arctic species are usually whitish or uniform in color, while the inhabitants of the tropics present the most beautiful variation in color. It is difficult to estimate the number of M. at present known. According to the latest authorities there are over 30,000 living species.

The uses of many species of M. for food are well known; and as bait for fishing, mussels and some other M. are of great value.

Many M. which secrete a nacreous or pearly shell are used for ornaments and particularly for the manufacture of pearl buttons. In ancient times a species of marine snail (Murex) furnished the famous Tyrian purple dye.

The animals of this subkingdom are divisible into five classes, as follows: Class 1, *Pelecypoda* or Lamellibranchiate; examples, *clams, oysters, cockles, mussels.* Class 2, *Scaphopoda* or tooth-shells; example, *Dentalium.* Class 3, *Amphineura,* the coat-of-mail shells; example, *Chiton.* Class 4, *Gastropoda;* examples, *snail, cowry, limpet, doris.* Class 5, *Cephalopoda;* examples, *cuttle-fish, nautilus, devil-fish.* The pelecypods have been classified as Acephala (headless), and the other four groups have been united under the name Cephalophora. The terms Aglossa and Glossophora have been employed for these two assemblages, accordingly as the radula or teeth are absent or present. The Pteropoda are believed to be a degenerate group, closely allied to the ancestor of the Gastropoda.

See Zoology; also the separate titles of the various classes.

The literature of this subject is very extensive, and includes Cuvier, *Mémoires pour servir à l'Histoire et à l'Anatomie des Mollusques* (Paris 1817, 4to); Lamarck, *Hist. Nat. des Animaux sans Vertèbres*, 2d ed., by Deshayes and Milne-Edwards (11 vols. 8vo); Woodward, *Manual of the Mollusca;* and the third vol. (by Keferstein) of Bronn's great work, *Classen und Ordnungen des Thierreichs;* Huxley, *Morphology of Cephalous M.;* Hanley, *Molluscous Animals and their Shells* (4 vols. 8 vo); Gosse, *A Manual of Marine Zoology for the British Isles;* and Alder and Hancock, *Nudibranchiate Mollusca* (published by the Ray Society).

Adams, H. & A., *The Genera of Recent Mollusca;* Tryon, *Structural and Systematic Conchology* (2 vols.); Fischer, *Manual de Conchyliologie;* Pilsbry, Tryon's *Manual of Conchology* (25 vols.); *Guide to the Study of Helices;* Dall, *Tertiary Mollusks of Florida;* Zittel, *Text-book of Paleontology;* Binney, *Land and Fresh-water Shells of North America; A Manual of American Land Shells;* Lea, *Observations on the Genus Unio;* Taylor, *A Monograph of the Land and Fresh-water Mollusca of the British Isles;* Moquin-Tandon, *Histoire Naturelle des Mollusques de France;* E. Ray Lankester, *Article Mollusca* in the Encyclopedia Britannica. Consult also the various papers of Adams, Baker, Bartsch, Binney, Dall, Gould, Jeffreys, Kuster, Lacaze-Duthiers, Martinii and Chemnitz, Owen, Pfeiffer, Pilsbry, Prime, Simpson, Sowerby, Stearns, Sterki, Tryon, Walker, etc.

Fossil Mollusca.—The hard shells of most M. fit them for long preservation, and make them the most frequent organic remains in the fossiliferous rocks from the Ordoircian upward. The nudibranchiate gastropods, having no hard parts that could be preserved, are without fossil representatives. The Cephalopoda, Gastropoda and Pelecypoda have existed together from the earliest period. The tetrabranchiate Cephalopoda were developed in great profusion and variety in the Paleozoic and Mesozoic eras; and as they decreased, the dibranchiate group took their place, and continued to increase in numbers until it reached its greatest development in the seas of our own day. Of the chambered shells, like the pearly nautilus, it is estimated that over 7,500 species are known, of which only five or six exist in the ocean at the present time; the cuttle-fishes and squids, on the other hand, are represented in the Mesozoic and Tertiary rocks by about 200 species, while over 300 are known as living species.

The living Gastropoda exceed the fossil in the proportion of about 5 to 4. This disproportion will appear greater when we remember that the fauna of the present seas is set against the faunas of some 25 different periods, yet it must not be forgotten that we can never be acquainted with more than a fraction of the entire animal life of any bygone age. Almost contemporaneous with the first living organisms, this group has gone on increasing

to the present time, when the numbers are so great that more than 20,000 living species have been recorded.

About 700 fossil Pulmonates are known. The oldest occur rarely in the Devonian and Carboniferous strata. They increase in the Jurassic and Cretaceous rocks, become widely distributed in the Tertiary strata, and reach their maximum development in the present period, there being more than 6,000 species known.

The Pelecypoda have been gradually increasing in numbers and importance from the earliest period, and they attain their maximum development in the existing seas. They are very rare in the Cambrian period, rare in the Ordovician period, and do not become a dominant feature until late Silurian and Devonian time. The number of species gradually increases throughout Mesozoic and Tertiary times. The recent species number about 6,000 and the fossil species a somewhat larger number.

The Scaphopoda appear doubtfully in Silurian strata. They are common in Mesozoic and Tertiary strata and attain their maximum numbers in existing seas.

The Amphineura first appear in Ordovician strata and steadily increase in numbers until the present time. About 80 fossil species and several hundred recent species are known.

MOLLUSCOIDA, n. plu. *mŏl'lŭs-koy'dă* [Eng. *mollusca*, and Gr. *eidos*, appearance]: one of the two great divisions of the sub-kingdom *Mollusca*, often compound, lower in structure than the true mollusks, and which may have shelly or horny coverings; the *Molluscoida* comprise the three classes, *Polyzoa*, *Tunicata*, and *Brachiopoda*: see MOLLUSCA: INVERTEBRATE (INVERTEBRATA).

MOLLUSK, or MOLLUSC, n. *mŏl'lŭsk*, MOL'LUSKS, n. plu. *-lŭsks* [F. *mollusque*, a mollusk—from L. *molluscus*, soft—from *mollis*, soft: comp. *mollusca*, a nut with a soft shell; *molluscum*, a species of fungus growing on the maple-tree]: one of a class of animals whose bodies are soft and destitute of a bony skeleton, as snails, oysters, and shell-fish in general. MOLLUSCA, n. plu. *mŏl-lŭs'kă*, one of Cuvier's grand divisions of the animal kingdom which includes all the shell-fish proper (see above). MOLLUSCAN, a. *mŏl-lŭs'kăn*, or MOLLUS'COUS, a. *-kŭs*, pertaining to or resembling the mollusca. MOLLUSKITE, n. *mŏl-lŭs'kīt*, in *geol.*, a dark-brown carbonaceous substance occurring in shelly marbles, originating from the transmutation to mineral of the soft bodies of the mollusca. MOLLUS'CUM, n. *-kŭm*, in *pathol.*, a skin disease, consisting of one or more small tumors, from the size of a pea to that of a pigeon's egg. There is a true molluscum, which is contagious, and a false, which is non-contagious.

MOLLWITZ, *Möl'vĭtz:* village of Prussian Silesia, govt. of Breslau, seven m. w. of Brieg. Pop. 619.—East of it lies the celebrated battle-field where Frederick II. of Prussia gained his first victory over the Austrians under

Marshal Neipperg, 1741, Apr. 10. According to the usual account Frederick, on seeing his right wing and centre thrown into confusion and routed, put spurs to his charger, and fled from the field; but the advance of three battalions of Prussian infantry stopped the Austrians, while by this time Marshal Schwerin, who commanded on the Prussian left, routed the Austrian right wing, and compelled the whole to retreat. The immediate result of this victory was an alliance between France and Prussia, to dissolve which Austria was compelled to surrender Silesia to Frederick 1742.

MOLLY MAGUIRES, *mŏl'ĭ ma-gwīrz'*: name of a secret order comprising several thousand anthracite coal miners in n.e. Penn., mainly foreigners; believed to have been formed about 1854, and but little known till 1875, when they began committing murder and other outrages on mining and railroad officers. James McFarlan, a detective, succeeded in gaining admission to the order, by initiation, and obtained information concerning the members and their deeds of violence; and on his testimony the leaders were arrested. An exciting trial followed, a number of the prisoners were condemned, and were hung (1877) by squads and on separate days, and the order disbanded.

MO'LOCH: genus of saurian reptiles, of family *Agamidæ* (see AGAMA). *M. horridus*, an Australian species, is perhaps the most ugly and repulsive in appearance of all the saurian tribes. The whole surface of the body is covered with irregular plates and strong sharp spines; the upper surface of the head is crowned with two very large spines; and on the back of the neck are large rounded protuberances, covered with granular scales and spines. The moloch is, however, entirely inoffensive.

MOLOCH, n. *mō'lŏk* (more correctly MOLECH), also MILKOM, MALKOM (*their* king) [from Heb. *Melech*, king]: the chief Ammonite deity (the Chemosh of the Moabites —see MOABITES), whose worship consisted chiefly of human sacrifices, purifications, and ordeals by fire, mutilation, perpetual virginity, and the like. The name Moloch was originally not so much the name of an individual deity as an honorable title indicating the supreme god of all gods. In the abominable heathen corruption of Israelitish worship, Moloch (sometimes Baal, 'lord,' as a synonym) was the object of worship. Rabbinical tradition represents Moloch as a human figure of brass or clay, with a crowned bull's head, upon whose extended arms were laid the doomed children. A fire within the hollow statue soon scorched them to death, while their shrieks of agony were deadened by a loud noise made by the priests on various instruments. But though this description nearly coincides with that of the statue of the Carthaginian Kronos, and though so late a traveller even as

Benjamin de Tudela speaks of having seen the remains of an ancient Ammonite temple at Gebal, with the fragments of an idol somewhat corresponding to the above representation, yet nothing certain is known about this point at present. The weight of evidence is against identification of M. with Kronos or Saturn, though the two forms of worship may have been cognate; and the offering of children by fire to M. was, as far as appears, not after the Carthaginian manner above noted, but the children, like animals offered, were first slain and then burned on the altar. The worship of M., in whatever shape it may have been, was common throughout the Canaanite nations. The Carthaginians, through whom it was probably spread over the whole East, worshipped Kronos in rites of fire and bloodshed; and human beings, children or grown-up persons, prisoners or virgins, were, either on certain periodical festivals, or on sudden emergencies, offered up throughout almost all the lands and islands which the merchant-people of antiquity may be supposed to have touched at. The description of the Kronian statue, as given by classical writers, differs only in that small respect from the one given above, that the child fell, according to the former, from the hands of the god into a burning fire below, instead of being slowly burned to death. For fire-worship in general, which is the main idea of 'Moloch,' see GUEBRES; though there is no sufficient ground for identifying M. as a form of the sun-god. The name itself gives no clue to its special nature, nor does any comparison with cognate roots lead any further. Molech, or Melech, is the supreme king or deity of the people, who have enthroned him as their tutelary god. Naturally, the princes of Ammon are the princes of *Malcham* = their (the Ammonites') king or god, and his priests were high in social rank.

Respecting the special history of this worship among the Israelites, we can only say that, though we do not see any more reason to presuppose its wide spread at early times (on account of the frequent occurrence of the word 'king' in doubtful passages), than there is the slightest ground for assuming (as has been done by Daumer and others) that the whole Mosaic religion originated in a Moloch-service (a notion which hardly required a serious refutation)—yet there is no doubt that Moloch worship had its secret, though few adherents, even before the Canaanite women in Solomon's harem reintroduced it publicly. The Valley of Hinnom and the Mount of Olives were the chief places of these abominable rites; the former being afterward adopted as the name for Hell, even in Islam. Not until the time of Josiah was this horrible idolatry rooted out from among the people. The word has now become a figurative designation for a kind of irresistible dread influence, at whose shrine everything would be sacrificed, even as the deluded father offered his own child to the terrible idol.

MOLOGA, *mo-lo'gâ:* dist. town in the w. of the govt. of Jaroslav, European Russia, near the confluence of the Mologa and Volga, 68 m. w.n.w. of Jaroslav. It is a town of great antiquity, and belonged first to the principality of Rostof, afterward to Yaroslaf, but 1321–1471 it had its own princes. There was formerly an extensive fair at M. The timber-trade, and the carriage of goods by river-boats and rafts, now occupy the majority of the inhab itants. Pop. (1890) 6,885. —The river Mologa is one of the links between the Volga and the Neva.

MOLOKA'NI: Russo-Greek sect: see MALAKANES.

MOLOSSUS, n. *mŏ-lŏs'sŭs* [Gr. *Molossos*, belonging to the Molossians, in Epirus]: in *Gr. verse*, a metrical verse consisting of three long syllables.

MOLTEN, a. *mōl'tn* [pp. of MELT, which see]: made of metal by melting.

MOLTKE, *mōlt'kĕh*, HELLMUTH, Count VON: 1800, Oct. 26—1891, Apr. 24; b. Mecklenburg, long the seat of his family: field-marshal of the German army He was chief of the general staff, and planned the Prussian campaign of 1866 against Austria, and the German campaign of 1870–1 against France. Soon after his birth, his father, a military officer, left Mecklenburg, and acquired an estate in Holstein. He and his brother were sent to the military acad. in Copenhagen, where iron discipline and military frugality laid the foundation of his later character. In 1822, he entered the Prussian army as cornet. His parents having by this time lost all their fortune, he was left without any pecuniary means, and had to undergo many hardships to maintain himself in his position—the pay of the Prussian officers being very small; yet he managed to save enough to take lessons in modern languages, which afterward proved of great advantage. His eminent abilities soon procured him a place in the general staff. 1835–39, he was in Turkey and Asia Minor, whither he was sent by the Prussian govt. to report on the war between that country and Mehemet Ali. Several anonymous publications of his, descriptive of the country and the war, are noticeable. After his return, he rapidly advanced through the different stages to the rank of general, continuing, however, on the general staff. His wonderful strategical powers were of immense service in the wars with Denmark (1863–4), Austria (1866), and France (1870–1); bringing them all to triumphant issues. At the end of the Austrian war he was rewarded with the order of the Black Eagle, 1870 he was created a count, and 1871 he was raised to the rank of field-marshal. He published a work on the Franco-German war; and *Letters from Russia* (1881, but written many years before in his early manhood). M. was a man of great modesty and simplicity; reserved, and little given to talk. See GERMANY: also Müller's *Life of M.*, trans. by Pinkerton (1879).

MOLUCCAS, *mō-lŭk'kaz*, The, or Royal Islands, properly (as distinguished from the M. or Spice Islands), the islands Ternate, Tidore, Makian, Motir, and Batjan, lying w. of Gilolo, and washed by the Moluccas Strait or Passage, which separates Gilolo from Celebes.—Ternate, the most important, is a volcanic mountain with plains at its base. The top is in 0° 48′ 30″ n. lat., and 127° 26′ 30″ e. long.; area, 33½ sq. m. Pop. 8,594, of whom 109 are Europeans. The town is on the e. side and contains the sultan's palace, the Dutch residency, Prot. church, govt. school, etc. The island is fertile and well watered; the natives peaceful. They cultivate rice, cotton, tobacco, etc., trade with the adjacent islands, and build vessels, from the light skiff and the tent-boat to the war-galley of 60 or 80 rowers, carrying two or more pieces of light artillery.—Tidore is s. of Ternate, its n. point being 1° 11′ n. lat., and 126° 7′ e. long.; area, 33 sq. m. Pop. 8,500. The island is a volcano, 5,532 ft. high, and fertile for 3,000 ft. The natives are less gentle, but more industrious than those of Ternate, and diligently cultivate the soil, weave, and fish. They are Mohammedans, and have many mosques. The sultans of Ternate and Tidore are subsidized by and subject to the Netherlands, exercising their authority under the surveillance of the Resident.—Makian lies in 0° 18′ 30″ n. lat., and 127° 24′ e. long., is very fertile, yields much sago, rice, tobacco, canary-oil, etc., and has important fishings. Pop. 5,000. The natives are industrious, make good nets, spin yarns, and weave coarse striped fabrics.—Further n., in 0° 28′ n. lat., and 127° 29′ 30″ e. long., is Motir, which formerly yielded a considerable quantity of cloves, and later sent much earthenware to all the Spice Islands.

Batjan, the only remaining Royal Island, lies between 0° 13′—0° 55′ s. lat., and 127° 22′—128° e. long.; 50 m. in length and 18 in breadth; has many mountain peaks 1,500 to 4,000 ft. in height, the sources of numerous streams. The greatest part of this beautiful island is covered with ebony, satin-wood, and other valuable timber trees, which give shelter to numerous beautiful-plumaged birds, deer, wild hogs, and reptiles. Sago, rice, cocoanuts, cloves, fish, and fowls are plentiful, and a little coffee is cultivated. Coal is abundant, gold and copper are in small quantities. The inhabitants, numbering 1,800, are lazy and sensual, a mixed race of Portuguese, Spaniards, Dutch, and natives. These islands all are volcanic, Ternate being a mountain, sloping upward to 5,563 ft., to which Tidore bears a striking resemblance. Makian is an active volcano, which, so late as 1861, Dec., threw forth immense quantities of lava and ashes, by which 326 lives were lost, and 15 villages in part or in whole destroyed. Motir is a trachyte mountain, 2,296 ft. in height; and Batjan, a chain with several lofty peaks. Total pop. of the M. proper, 25,000.

South-w. of Batjan is the Obi group, consisting of Obi Major, Obi Minor, Typha, Gonoma, Pisang, and Maya, of which Obi Major, 1° 35′ s. lat., and 127° to 128° e. long.,

is by far the largest, 598 sq. m. It is hilly and fertile, being covered, like the smaller islands of the group, with sago and nutmeg trees. The islands of this group are uninhabited, and serve as lurking-places for pirates and escaped convicts. In 1671, the Dutch built a block-house, called the Bril; and a few years later, the sultan of Batjan sold the group to them for $800; but the station being found unhealthful, the company abandoned it 1738.

The MOLUCCAS, or SPICE ISLANDS, in the broad use of the term, lie e. of Celebes, scattered over nearly 11 degrees of lat. and long., 3° s.—8° n. lat., and 126°—135° e. long., including all the territories formerly ruled by the sultans of Ternate and Tidore. They comprise all the islands of the E. Indian archipelago, between Celebes on the w., the Papuan Islands and New Guinea on the e., Timor on the s., and the open Pacific on the n.; abt. 450 m. from e. to w., and 800 m. from n. to s. They are divided into the residencies of Amboyna (q.v.), Banda (q.v.), and Ternate; a fourth residency being Menado (q.v.). Over the n. groups of the Spice Islands, the Netherlands exercise an indirect government, the sultans of Ternate and Tidore being required to have all their appointments of native officials ratified by the resident. The s. groups are directly under European rule. The residency of Amboyna contains that island, sometimes called Ley-Timor, or Hitu (from the two peninsulas of which it is formed), Buru, the Uliassers group, and the w. part of Ceram. That of Banda includes the Banda, Keffing, Key, Arru, and other islands, also the e. portion of Ceram. Under the residency of Ternate are placed the M. proper, Gilolo, the neighboring islands, and the n.w. of Papua. Pop of the M. and dependencies, about 5,000 Europeans and 800,000 natives.

Amboyna, the Banda and Uliasser Islands, chiefly supply the cloves, nutmegs, and mace which form the staple exports. The Banda Islands are Neira or Banda-Neira, Great Banda, Ay or Way, Rhun, Rozingain, and Goenong-Api; 588 sq. m. Pop. 7,000, of whom 500 are Europeans; that of the whole residency 150,000, including the e. part of Ceram. The principal island of the group is Neira, s.e. from Amboyna, 4° 33′ s. lat., and 130° e. long., separated by narrow straits from Goenong-Api on the w., and Great Banda on the east. The coast is steep, and surmounted by several forts and batteries, which command the straits and roadstead. The town of Neira, on the s. side of the island, is cap. of the Dutch residency of Banda, has a Prot. church, school, and hospital. The Banda Islands have rich soil, and are planted with nutmeg-trees, which produce in one year more than a million lbs. of nuts, and near 300,000 lbs. of mace. The culture has nearly doubled since 1851. Pine-apples, the vine, banana, cocoa-nut, and other fruit-trees thrive, and are abundant. Ay is the prettiest and most productive of the group. Goenong-Api is a lofty volcano. There are wild cows, hogs, and deer; sea-carp and mackerel,

which last are dried, and form with sago the food of the slaves. The e. monsoon begins in May, and the w. in Dec., and are accompanied with rain and storms. The climate is not very healthful.

The Uliassers, which, with Amboyna, produce the cloves of commerce, are Saparoua, Oma or Haroukou, and Nousa-Laut. They lie e. of Amboyna, 3° 40′ s. lat., and 128° 33′ e. long.; 107½ sq. m. Saparoua is the largest, and is formed of two mountainous peninsulas, joined in the middle by a narrow strip of undulating grassy land. Recently there were about 100,000 trees producing 185,000 lbs. of cloves. Pop. 11,665, of whom 7,340 are Christians, and have 12 schools, with very large attendance of scholars.—Oma, separated from Saparoua by a strait of a league in width, has 11 villages, of which Harouka and Oma are chief. It is mountainous in the s., and has several rivers and sulphurous springs. The produce of cloves has amounted in one year to 40,000 lbs.; and the villagers possess 50,000 cocoa palms, besides other fruit-trees. The woods abound with deer and wild hogs, the rivers with fish. Sago is grown, but not in sufficient quantities to meet the wants of the people, who draw further supplies from Ceram. The beautiful village of Harouka, on the w. coast, is the residence of the Dutch postholder, who is pres. of the council of chiefs. Here is the head office of the clove-produce. There are two forts on Oma, several churches, and six schools, with 700 pupils. Pop. 7,500, one-half Christians, the other Mohammedans.—Nousa-Laut lies s.e. of Saparoua. It is planted with clove-trees, which in one year produced 120,000 lbs. There are more than 30,000 cocoanut-trees. Pop. 3,479, formerly pirates and cannibals, all now Christians, with schools in every village—attended (1859) by 870 pupils.

The clove-tree and the nutmeg are indigenous to all the Spice Islands, but the clove-cultivation is confined to Amboyna and the Uliassers, the nutmeg to the Banda Islands. Till 1824, the Dutch prohibited the planting of these trees in other parts, and caused those of native growth to be rooted out, in order to prevent smuggling, and to retain the supply of these spices to the European market. The Spice Islands are generally healthful both for Europeans and for Asiatics; and though the plains are sometimes very hot, mountains are always near, where it is pleasantly cool in the mornings and evenings. Besides the spice-trees, the bread-fruit, sago, cocoa-nut, banana, orange, guava, papaw, also ebony, iron-wood, and other valuable timber-trees, are abundant. The natives of some of the islands are Alfoers; of others, Malays on the coasts, and Alfoers in the interior. In Ceram are also Papuan negroes, brought originally from Bali and Papua as slaves.

The resident and other Dutch officials reside in the city of Amboyna, the streets of which intersect at right angles, are broad, and planted with rows of beautiful trees: see AMBOYNA.

The native inhabitants of the Moluccas in the wider sense, belong to two or three different stocks, now much intermingled, Malays, Papuans, perhaps also Polynesians. There are numerous descendants of the early Portuguese settlers, known as *Orangsirani*, i.e., Nazarenes, and speaking a language compounded of Malay and Portuguese. They are now mostly Protestants. Slavery has introduced numerous foreign elements into the population. Everywhere Chinese are found; and often Arab merchants, having native wives. A great volcanic belt passes through the Moluccas and gives them their distinctive character; but many of the islands have no volcanoes, and some seem to be non-volcanic in origin. The vegetation as a whole is extremely rich, but has not yet been thoroughly investigated. The animal life belongs to the Australian type, and closely resembles that of New Guinea. Some Asiatic mammals, such as deer, are found, especially on the large islands. None of the islands but Batjan has any monkeys; and the mammals altogether are few in number. Birds are numerous and varied. Of 200 species of land-birds, 140 are peculiar to the islands; parrots, pigeons, and kingfishers are by far the most numerous kinds, and constitute a third of the whole.

In 1521, Antonio de Brito first appeared to take possession of the Moluccas in the name of the king of Portugal; and after a long period of violence, intrigue, and perfidy, the Portuguese were driven out by the Dutch and natives, at the beginning of the 17th century. The change was of no advantage to the natives, for the Dutch, having obtained the exclusive right of buying all the cloves, at a nominal value, a series of wars ensued, which resulted in the subjugation of the Spice Islands. Recently, new sultans of Ternate and Tidore have been appointed, with less power than their predecessors; and the wars with the Alfoers of Ceram, 1859-60, have brought them more fully under Dutch rule, with a decided improvement in their condition.

MOLY, n. *mō'lĭ* [Gr. *mōlŭ;* L. *mōly,* moly]: wild garlic—the *Allĭum moly;* a fabulous herb having a white flower and a black root, mentioned by Homer as possessing magic power against the charms of Circe; the *Allĭum magĭcum,* ord. *Lilĭācĕæ.* A reminiscence of the Circean legend is probably still traceable in the garlic called Sorcerer's Garlic.

MOLYBDENA, n. *mŏl'ĭb-dē'nă,* or MOLYBDENITE, n. *mŏl-ĭb'dĕn-īt* [Gr. *molubdaï'na,* a mass of lead—from *molubdos,* lead: L. *molybdæna*]: a native sulphid of molybdenum, having the formula MoS_2, and crystallizing in tabular or hexagonal forms, probably belonging to the hexagonal system. It has a marked basal cleavage, and resembles some forms of mica. It is leaden-gray in color, with a metallic lustre, a specific gravity of about 4.7 and a hardness of from 1.0 to 1.5. It commonly

occurs in granite, gneiss and other crystalline rocks. In the United States it is found in the New England states, and in New York, Pennsylvania, Colorado, and California. It also occurs in Canada, and crystals from one to two inches in diameter have been discovered in Renfrew county, Ontario.

MOLYBDENUM [symbol Mo, at. wt. = 96 (Hydrogen = 1)]: occurs chiefly as *molybdenite*, MoS. The metal is prepared by reducing the oxide with aluminum. It closely resembles wrought iron, may be tempered and is used to alloy with steel. The principal compound is the *oxide* MoO_3, which is an anhydride like sulphur trioxide, SO_3. It forms salts with bases; these, in general, resemble the sulphates. Two of them, which are often used for analytical purposes, are the *sodium* and *ammonium* molybdates, $Na_2MoO_4 .10H_2O$, and $(NH_4)_2MoO_4$, respectively. They are employed to precipitate phosphoric acid as in the analysis of fertilizers. The product formed is yellow and has the formula $(NH_4)_3PO_4 .11MoO_3 .6H_2O$. It is one of the simplest members of a very large number of highly complex salts formed by molybdenum with bases and such acids as phosphoric, arsenic, tungstic, etc.

MOMBASA, *mŏm-bâ'sâ*, or MOMBAZ, *mŏm-bâs'*: seaport town of e. Africa, in the territory of the sultan of Zanzibar, on a small coralline island off the coast, in the middle of an estuary formed by two small rivers, lat. 4° 4′ s., long. 39° 43′ e., about 150 m. n. of Zanzibar Island. The shores of the island are rocky and abrupt; and though the channel may be forded at low water, the attempt is attended with danger. The town has the usual Arab characteristics of ruin, neglect, and filth in a striking degree. The only object of interest is an extensive fort, on a rock, cut perpendicularly, 1596, by the Portuguese, and restored by them 1635, as an inscription over the principal gateway indicates. It is a work of considerable pretension, with more than 100 guns in position, but in ruinous condition. The inhabitants, the majority of whom are sunk in abject poverty, mostly live in wretched hovels, scattered among what remains of the once magnificent buildings. The harbor is still good, and is commodious and safe. Mombasa was visited by Vasco da Gama 1497, when he found it a large and very prosperous town. It was held by the Portuguese during most of the period 1529-1720. The English held it 1824-26, when they resigned it. Soon after the Sultan of Muscat obtained possession of the town, which at his death fell to his son, the Sultan of Zanzibar. In 1888 the Imperial British East Africa Company received governing rights over it, and since then it has passed definitely to British possession. Pop. about 25,000.

MOME, n. *mōm* [imitative word]: for *mum*, silence; a dull, stupid, silent person.

MOMENT, n. *mō′mĕnt* [F. *moment*—from L. *momen′tum*, movement, a very small portion of anything—from *movĕō*, I move: It. *momento*]: the smallest possible portion of time; the unit of time; an instant; one-sixtieth part of a minute; importance; value; force.—The *Moment* of any physical agency, is its importance with reference to some special application. Thus, the moment of a force applied (perpendicularly) to a lever, is the importance of the force as regards turning the lever about its fulcrum. It is, as we know (see LEVER), proportional to the product of the force by the distance of its point of application from the fulcrum. The moment of a force about any axis (to which its direction is perpendicular) is the product of the force by its least distance from the axis; and a similar definition is laid down for moment of velocity and moment of momentum. It is easy to see (see MOMENTUM) that in any system of mutually acting bodies the moment of momentum about any axis remains constant, since the equal mutual forces measure the momentum transferred from one body to another, and the moments of these forces are in pairs equal and opposite. A particular case of this is Kepler's law that each planet describes equal areas in equal times about the sun. *Moment of Inertia* in the rotation of bodies round an axis, is the sum of the products of each particle of the body into the square of its distance from the axis; or if M. be the body, m_1, m_2, m_3, etc., the particles composing it, and r_1, r_2, r_3, etc., their corresponding distances from the axis, then the moment of inertia of $M = m_1 r_1^{\,2} + m_2 r_2^{\,2} + m_3 r_3^{\,2} +$, etc.; and if a quantity, k, be found such that $Mk^2 = m_1 r_1^{\,2} + m_2 r_2^{\,2} + m_3 r_3^{\,2} +$, etc., then k is called the *radius of gyration*. See CENTRE OF GYRATION. MOMENTARY, a. *mō′mĕnt-ėr-ĭ*, done in an instant; lasting an extremely short time. MO′MENTARILY, ad. *-ėr-ĭ-lĭ*, or MO′MENTLY, ad. *-lĭ*, for a moment; every moment. MOMENTOUS, a. *mō-mĕnt′ŭs*, important; weighty; of great consequence. MOMENT′OUSLY, ad. *-lĭ*. MOMENT′OUSNESS, n. *-nĕs*, state of being of the utmost consequence. MOMENTUM, n. *mō-mĕnt′ŭm*, impetus; in *mech.*, quantity of motion in a moving body; the product of the mass by the velocity of a moving body (see below).—SYN. of 'moment': weight; consequence; avail; signification; consideration; twinkling; momentum.

MOMENTANY, a. *mŏm′ĕn-tă-nĭ: OE.* for MOMENTARY.

MOMEN′TUM, or QUANTITY OF MOTION: quantity defined by Newton as proportional to the mass moving, and its velocity, conjointly. If we assume unit of M. to be that of unit of mass moving with unit of velocity, we shall evidently have, for the M. of a mass M, moving with velocity V, the expression MV. And such is the unit generally adopted.

It is shown by experiment that, when force produces motion in any body, the M. produced in one second is proportional to the force—and, in fact, *force is measured by the momentum that it is capable of producing in unit of*

time. Thus, the same force, if acting for one second on each of a number of bodies, produces in them velocities which are *inversely* as their masses. Also when, as in the case of falling bodies, the velocities produced in one second are the same in all, we conclude that the forces are *proportional* to the masses; and, in fact, this is the physical proof that the weight of a body is proportional to its mass. Again, if different forces act, each for a second, on the *same* mass, the velocities produced are proportional to the forces. All these are but different modes of statement of the experimental fact, that force is proportional to the M. that it produces in unit of time; which forms a part of Newton's second Law of Motion.

When two masses act on each other, Newton's third Law of Motion (see MOTION, LAWS OF) shows that the forces that they mutually exert are equal and opposite. The momenta produced by these must therefore be equal and opposite. Thus, in attraction or impact of two masses, *no momentum is lost;* since what is lost by one is gained by the other.

The M. of a system of bodies can be resolved (as velocity is resolved) into components in any assigned directions, likewise the mutual forces of the system may be thus resolved. Applying the previous result, we see at once that in any system of mutually acting bodies (such, for instance, as the solar system), no M. is, on the whole, either gained or lost in any particular direction; it is merely transferred from one part of the system to another. This fact, called the Conservation of M., has caused great confusion in the minds of pseudo-physicists, who constantly confound it with Conservation of Work or Energy, a totally different thing.

The M. produced by a force in any period of time is measured by the product of the force and the *time during which it has acted*—the energy or work done by a force is measured by the product of the force and the *space through which it has acted.* M. is proportional to the simple velocity of a body, and *can never, by any known process, be transformed into anything else.* Energy, when depending on velocity (see FORCE, CONSERVATION OF), is proportional to the *square* of the velocity, and is in the natural world *constantly being transformed from its actual or kinetic form to its potential form, and back again, or to some other kinetic form such as heat, and finally must become heat.* M., on the contrary, is never altered, either in kind or in amount.

In *knocking down* a wall, or in staving in the whole side of a ship, the battering-ram of the ancients (when constructed of sufficient mass, and worked by the proper number of men or animals) was probably nearly as effective as the best modern artillery. But in making a *breach* in a wall, or in punching a hole in the armor of an ironclad, mere massive shot with low velocities (such as those of the Dahlgren guns) are comparatively ineffective, however great their M.; while an Armstrong or Whit-

worth projectile, with a fraction of the momentum, but with great velocity, and, for its size, much greater kinetic energy, effects the object with ease. In many everyday phenomena we see distinctly the difference between these two affections of matter. Thus, a blow delivered from the shoulder by a *heavy* pugilist, even if it be sluggishly given, generally floors the antagonist, without doing much other injury; but a sharp stroke administered by a light weight, while hardly disturbing the adversary's equilibrium, inflicts serious hurt.

MOMIERS, n. *mŏm'ĭ-ėrz* [F. *momier*—from OF. *momer*, to mumm (see MUMM)]: on the *continent* of Europe, term of reproach or contempt—applied to certain sectaries among Protestants, particularly in Switzerland, and adjacent parts of France and Germany. The Momiers held the doctrines of the divinity of Christ and the total depravity of the human race, and resided principally in the French cantons of Switzerland, where these and other Calvinistic tenets had been almost wholly abandoned. Indeed, preaching on some of these 'debatable doctrines' had been forbidden by the Association of Pastors in the established (Presby.) church. This order was disregarded by the leader of the Momiers, Cæsar H. A. Malan, D.D. (q.v.); and he was shut out of the pulpits of Geneva, and held services at his house, and later at a chapel which he built, though he did not separate himself from the established church. The Momiers were very fervent in their services and vigorous in their denunciation of the prevalent departure from the reformed faith. They were subjected to ridicule, opposition, and restraint; received great aid from Robert Haldane (q.v.); and having reawakened an evangelical interest in Switzerland and adjacent parts of France, the Momiers in large part became merged again in the church.

MOMMSEN, *mŏm'sėn*, THEODOR: writer on the history and polity of ancient Rome: b. Garding, Slesvig, 1817, Nov. 30; d. Charlottenberg, Prussia, 1903, Nov. 1. Mommsen studied first at Altona, subsequently at the University of Kiel, where he graduated in arts 1843. Having obtained assistance from the Academy of Berlin to defray the expenses of a prolonged course of travel, Mommsen spent three years in investigating Roman inscriptions in France and Italy, and published the results in the Annals of the Archæological Institute of Rome and the Herculanean Academy of Naples. The political disturbances of 1848 diverted Mommsen from his favorite pursuits; and for a time he engaged in politics, taking the editorship of the leading Slesvig-Holstein paper, for which he wrote the leading articles in the summer of 1848. He held for a short time a chair in the University of Leipzig, but his appointment was canceled on account of his strong political tendencies. He was made titular professor of law at Zurich 1852, and at Breslau 1854; and professor of Roman law at Berlin 1858. Among

his most valuable contributions, special mention must be made of the following: *Die Unteritalischen Dialekte* (Leip. 1850), *Corpus Inscriptionum Neapolitanarum* (Leip. 1851); his monographs on *The Chronography of the Year* 354, and *Roman Coins* (Leip. 1850); the edict of Diocletian, *De Pretiis Rerum Venalium* A. 301 (Leip. 1851); *Inscriptiones Regni Neapolit.-Latinæ*, 1852; *Die Rechtsfrage zwischen Cæsar und d. Senat*, 1857; his great work on Roman history, *Röm. Geschichte*, 1854–56, 7th ed. 1881 (ably trans. into English by W. P. Dickson); *Römische Forschungen* (1864); *Res Gestæ Divi Augusti* (1865); *Römisches Staatsrecht* (2d. ed. 1877); *Die Erzählung von Caius Martius Coriolanus;* and *Digesta Justiniani Augusti* (1868–72). His very valuable library was destroyed by fire 1880.

MOMORDICA, *mō-mawr′dĭ-ka:* genus of plants of nat. order *Cucurbitaceæ*, having lateral tendrils, and the fruit splitting when ripe. *M. Balsamina*, native of s. Europe and of the East, produces a curious, oblong, much-warted fruit, the Balsam Apple, which, when green, is infused in oil, to form a vulnerary much esteemed in Syria and some other countries. The ripe fruit is a dangerous poison. The plant is used to form arbors.—The large, red, thorny fruit of *M. mixta*, called *Gol-kakra* in India, is there used for food.—*M. echinata* is called the *Gooseberry Gourd*, because its fruit, covered with bristles, is about the size and shape of a large gooseberry. The unripe fruit is used for pickling, and is sometimes seen in Covent Garden market, London.

MOMOTOMBO: highest volcano in Nicaragua, the extremity of the Marrabios Mts., at the head of Lake Managua, about 25 m. n.e. of the city of Leon. It is 7,200 ft. high, of which nearly 3,000 ft. is formed of the scoriæ ejected during eruptions. It is still active, sending out smoke and occasional showers of ashes. It has several vents on its sides, while at its base are a number of hot springs. The summit of M. has never been reached, though Victor Hugo's *La Légende des Siècles* embodies the legend of an ascent by Spanish priests to plant the cross upon it, who were never heard of afterward. The volcano can be seen far out at sea.

MOMPOX, *mōm-pŏch′:* town of the United States of Colombia, on the Magdalena, 110 m. s.e. of Cartagena. Here the Magdalena, during its periodical floods, rises 12 or 15 ft. above its usual level; and the quay and custom-house of M. are built unusually high, to provide against this emergency. All foreign goods for the consumption of the Valley of the Magdalena pass through this town. Pop. estimated 10,000.

MOMUS, n. *mō′mŭs* [Gr. *momos*, derision]: in *anc. myth.*, the god presiding over ridicule, mirth, and raillery, aiming his mocking censure at men and at the gods, and therefore expelled from heaven.

MON, *mŏn*, or Mono, *mŏn′ō* [Gr. *monos*, alone]: a prefix, signifying alone; single; solitary; only one.

MONACHAL, a. *mŏn′ă-kăl* [Gr. *mon′achos*, a monk—from *monos*, alone: It. *monacale:* F. *monacal*]: pertaining to monks or a monastic life; living alone; solitary. MON′ACHISM, n. *-kĭzm*, the system, the influences, and the state of a monastic life (see below).

MON′ACHISM, or MONAS′TICISM: in general a state of religious retirement, more or less complete, accompanied by contemplation, and by various devotional, ascetical, and penitential practices; in especial the corporate life of religious communities, in poverty and celibacy, and under a fixed discipline. It is, in truth, ASCETICISM (q.v.), with the element of religious solitude superadded. The institution of M. has, under different forms, entered into several religious systems, ancient and modern. That it was known among the Jews before the coming of Christ, appears from the example of the prophet Elias, and from that of the Essenians; and it is probable that religious seclusion formed part of the practice of the NAZARITES (q.v.), at least in the later periods of Jewish history. In the Brahmanical religion, it has had prominent place; and even to the present day, the *lamaseries* of Tibet may be said to rival in number and extent the monasteries of Italy or Spain. The Christian advocates of M. find in the gospel exhortations to voluntary poverty (Matt. xix. 21) and to celibacy (I Cor. vii. 37), at once the justification and the origin of the primitive institution. Its first form appears in the practice of asceticism, of which we find frequent mention early in the 2d century. The primitive ascetics, however, lived among the brethren, and not till the 3d c. did the peculiar characteristic of M. appear in the church. The earliest form of Christian M. is also the most complete—that of the ANCHORITES (q.v.); and is commonly believed to have in part originated in the persecutions, from which Christians were forced to retire into deserts and solitary places. The anchorets maintained from choice, after the cessation of the persecutions, the seclusion to which they had originally resorted as an expedient of security; and a later development of the same principle is found in the still more remarkable psychological phenomenon of the celebrated PILLAR-SAINTS (q.v.). After a time, however, the necessities of the religious life itself—as the attendance at public worship, the participation of the sacraments, the desire for mutual instruction and edification—led to modifications of the degree and of the nature of the solitude. First came the simplest form of common life, which sought to combine the personal seclusion of individuals with the common exercise of all the public duties; an aggregation of separate cells into the same district, called by the name *Laura*, with a common church, in which all assembled for prayer and public worship. From the union of the common life with personal solitude is derived the name *cenobite* (Gr. *koinos bios*, common life), by which this class of monks is distinguished from the strict solitaries, as the anchorets or eremites, and in which is involved, in addition to the obligations

of poverty and chastity, which were vowed by the anchorets, a third obligation of obedience to a superior, which, in conjunction with the two former, has ever since been held to constitute the essence of the 'religious' or monastic life. For the origin of the strictly cenobitical or monastic life, see ANTONY, SAINT: he may be regarded as its founder in the East, either by himself or by his disciples. So rapid was its progress, that his first disciple, PACHOMIUS (q.v.), lived to find himself the superior of 7,000. In the single district of Nitria, there were no fewer than 50 monasteries (Sozomen, *Eccles. History*, vi. 31), and before long, the civil authorities judged it expedient to place restrictions on their excessive multiplication. It seems to be admitted, that, in the East, where asceticism has always been held in high estimation, the example of Christian M. had a powerful influence in forwarding the progress of Christianity; though it is also certain that the admiration which it excited occasionally led to its natural consequence among the members, by eliciting pride and ostentation, and by provoking, sometimes to fanatical excesses of austerity, sometimes to hypocritical simulations of rigor. The abuses which arose, even in the early stages of M., are deplored by the very Fathers who are most eloquent in their praises of the institution itself. These abuses prevailed chiefly in a class of monks called *Sarabaitæ*, who lived in small communities of three or four, and sometimes led a wandering and irregular life. On the other hand, an extraordinary picture is drawn by Theodoret, in his *Religious Histories*, of the rigor and mortification practiced in some of the greater monasteries. The monks were commonly zealots in religion; and much of the bitterness of the religious controversies of the East was due to that unrestrained zeal; and it may be added that the opinions which led to these controversies originated mostly among the theologians of the cloisters. Most famous among these were an order called *Acœmetæ* (Gr. sleepless), from their maintaining the public services of the church day and night without interruption. See MONOPHYSITES: MONOTHELISM: NESTORIANS: IMAGE-WORSHIP.

It was in the cenobitic rather than the eremitic form that M. was introduced into the West, at Rome and in n. Italy by Athanasius; in Africa by St. Augustine; and afterward in Gaul by St. Martin of Tours. Here also the institute spread rapidly under the same general forms in which it is found in the Eastern Church; but considerable relaxations were gradually introduced, and it was not until the thorough reformation, and, as it may be called, religious revival effected by the celebrated ST. BENEDICT (q.v.), in the beginning of the 6th c., that western M. assumed its peculiar and permanent form. In some of the more isolated churches, e.g., that of Britain, it seems that the reformations of St. Benedict were not introduced until a late period; and in that church, as well as in the church of Ireland, they were a subject of considerable controversy. One of the most important modifications

of M. in the West, regarded the nature of the occupation in which the monks were to be engaged during the times not directly devoted to prayer, meditation, or other spiritual exercises. In the East, manual labor formed the chief, if not the sole external occupation prescribed to the monks; it being held as a fundamental principle, that for each individual the main business of life was the sanctification of his own soul. In the West, besides the labor of the hands, mental occupation also was prescribed, not for all, but for those for whom it was especially fitting. From an early period, therefore, the monasteries of the West, particularly of Ireland, or of the colonies, founded by Irish monks, e.g., Iona and Lindisfarne, became schools of learning, and training-houses for the clergy. At a later period, most monasteries possessed a *scriptorium*, or writing-room, in which the monks were employed in the transcription of MSS.; and though a great proportion of the work so done was, as might naturally be expected, in the department of sacred learning, yet it cannot be doubted that to the scholars of the cloister we owe the preservation of most of those masterpieces of classic literature which have reached our age.

In the remarkable religious movement which characterized the church of the 12th c. (see FRANCIS OF ASSISI: FRANCISCANS), the principle of M. underwent a further modification. The *spiritual egotism*, so to speak, of the early M., which in some sense limited the work of the cloister to the sanctification of the individual, gave place to the more comprehensive range of spiritual duty, which, in the institute of the various bodies of FRIARS (q.v.), which that age produced, made the spiritual and even the temporal necessities of one's neighbor equally with, if not more than, one's own, the object of the work of the cloister. For the progress of these various bodies, in the 12th c. and since, see their several titles. It remains to detail the later history of M., properly so called. Almost all the monastic institutes or the West are offshoots or modifications of the BENEDICTINES (q.v.); of these, the most remarkable are the CARTHUSIANS, CISTERCIANS, GRANDMONTINES, CLUGNIACS, PREMONSTRATENSIANS, and above all MAURISTS, or Benedictines (q.v.) of St. Maur. In more modern times, other institutes have been founded for the service of the sick, for the education of the poor, and similar works of mercy, which also are classed under the denomination of monks. For the most important of these, see their several titles.

The inclosure within which a community of monks reside is called a MONASTERY (q.v.) —Gr. *monasterion*, Lat. *monasterium*. By the strict law of the church, called the law of cloister or inclosure, it is forbidden to all except members of the order to enter a monastery; and in almost all the orders, this prohibition is rigidly enforced as regards the admission of females to the monasteries of men. To such a length is this carried in the Greek Church, that in the celebrated inclosure of Mount Athos, not only women, but all animals of the female

sex are rigorously excluded. The first condition of admission to a monastic order is the approval of the superior, after which the candidates remain for a short time as *postulants*. After this preliminary trial, they enter on what is called the *novitiate*, the length of which in different orders varies from one to three years; and at its close they are admitted to the profession, at which the solemn vows are taken. The age for profession has varied at different times and in different orders; the Council of Trent, however, has fixed 16 as the minimum age. Originally, all monks were laymen; but after a time, the superiors, and by degrees other more meritorious members, were admitted to holy orders. For the distinction of priest-monks and lay-brothers, see FRIAR; but in both alike, where the order is one of those solemnly approved by the church, the engagement taken at the final profession is life-long and irrevocable.

The monastic institute, from the very earliest time, embraced women as well as men. The former were called in Greek by the name *nonis* or *nonna*, and in Latin *nonna* (from which the English *nun*), as also *sanctimonialis*. The cloistered residence of nuns is called by various names, as NUNNERY, CONVENT, a name applied to the houses of men also. The general characteristics of the monastic institute for women are substantially identical with those for men: see the respective titles of the principal varieties of institute.

The reformed churches in the 16th c. discarded the practice of M., and the monastic houses were suppressed by Prot. governments. In some of the German states, the temporalities of the suppressed monasteries were retained, and were granted at pleasure by the sovereign, together with the titular dignity. Some of the German churches, however, in later times, have revived the institute both for men and for women, as has been done also in the Anglican Church both in the time of Laud and in our own day. In all these Prot. revivals of M., however, the engagement is revocable at the will of the individual. At the French Revolution, the monastic establishments of France were utterly suppressed; and in most of the other Rom. Cath. countries of Europe, the example has been followed to a greater or less extent. In England and Ireland and the United States, on the contrary, the institute has made rapid progress of late years. Most of the orders introduced are of the active rather than of the contemplative class. Besides references above, see BROTHERHOODS: SISTERHOODS: BROTHERS AND SISTERS OF CHARITY.

MONACO, *mŏn'â-ko:* smallest of European sovereign principalities; surrounded by French territory, on the Mediterranean coast, a few miles n.e. of Nice. It has long been notorious for the public gaming-tables, supplying great part of the revenues of the prince, at Monte Carlo (q.v.), e. of the town of M. The climate is fine, so that palms and aloes grow luxuriantly. From the 10th to the 18th c., M. was held by the Genoese family of Grimaldi. In 1815, it was ceded to Sardinia, which, however, recognized its independence, but reserved to itself the right of garrisoning the town of M. At this period, it consisted of three communes—Monaco, Mentone, and Roccabruna, with 52 sq. m., and pop. about 7,000. In 1848, Mentone and Roccabruna were annexed to Sardinia, in spite of a protest by his 'serene highness,' Carlo Honorio, third prince of M. The Italian war of 1859 placed the whole territory for a brief period under Victor Emmanuel; but Carlo Honorio sold Mentone and Roccabruna (1861) to the French emperor for 4,000,000 francs. M. itself is now also under French protection. The sovereign prince of M. possesses nothing but the city and a small patch of territory, total area 6 sq. m.; pop. (1900) 15,180.—The *town* of M. is a beautiful place on a rocky promontory; pop. (1890) 3,292; (1900) 3,292.

MONAD, n. *mŏn'ăd* [F. and It. *monade*—from mid. L. *monădem*, a unit: Gr. *monas* or *monăda*, unity, a monad —from *monos*, alone]: an indivisible thing; that which is one; an ultimate atom: for *Monad*, in philosophy, see below. In *chem.*, a univalent element—that is, one whose atom, like hydrogen, is supposed to have only one combining point; the simplest and extremely minute kind of microscopic animalcules (see below, MONAD, in Biology): a primary cell. MONADIC, a. *mŏn-ăd'ĭk*, or MONAD'ICAL, a. *-ĭ-kăl*, resembling a monad.

MON'AD, in Biology: generic name of many kinds of microscopic organisms, very minute, and supposed to be also of very simple organization. They appear, even under a powerful microscope, as mere points, moving rapidly through the fluid in which they exist, and often becoming aggregated in clusters; or they are seen to be gelatinous and globular, or nearly so, with a tail or thorn-like filament, by the vibrations of which they move. When the fluid is tinted by means of some harmless coloring matter, the existence of several cells or vesicles is discerned within the minute body. Ehrenberg therefore classed them among Polygastric Infusoria (see INFUSORIA), and no naturalist doubted their right to a place, though one of the lowest, in the animal kingdom. They are now universally regarded as vegetable, and are ranked among algæ. The organisms formerly known as Globe Animalcules (*Volvox*) are clusters of monads produced by gemmation from one monad and invested with a common envelope. Monads are of various colors. Their gemmation takes place according to fixed laws, so that the groups assume particular forms, characteristic of the different kinds. Thus, in the 'Breast-plate Animalcule'

(*Gonium pectorale*), so called from the form which the group frequently presents, a division takes place into four, and the number in a group is always either 4 or 16, a group of 16 always dividing into 4 parts, each of which contain 4 monads.—The minute moving points often seen under the microscope are probably not usually monads, but spores or germs.

MON'AD, in Philosophy: term first used in Greek philosophy, where it applies originally to the idea of mathematical unity. By moderns, especially by BRUNO and LEIBNITZ (q.v.), from whose systems the term has chiefly derived importance, it is used to describe the primary elements of all reality. The monads, in Leibnitz's philosophical speculation, are simple uncompounded substances, without figure, without extension, without divisibility, by the aggregation of which all bodies are formed, and into which all compounded things may ultimately be resolved. The monads are created things, but as being uncompounded, are indestructible; and though subject to change, the change is only external or relative. They may be divided roughly into three classes. The lowest class never emerge into definite consciousness, but remain in a comatose state. The next class possess feeling and memory and may be called souls. The highest class possess self-consciousness and a knowledge of universal truths. The Deity is the PRIME MONAD, or MONAD OF MONADS. The theory of monads enters largely into the philosophic system of Leibnitz, and indeed furnishes the key to much in that system which is otherwise obscure.

MONADELPHIA, n. *mŏn'ă-dĕl'fĭ-ă* [Gr. *monos*, alone; *adelphos*, a brother]: in *bot.*, plants having hermaphrodite flowers, in which all the stamens are united into one bundle by union of their filaments, through which the pistil passes. MON'ADELPH, n. *-dĕlf*, one of the *monadelphia*. MON'ADEL'PHIAN, a. *-fĭ-ăn*, or MON'ADEL'PHOUS, a. *-fŭs*, pertaining to the monadelphia; having the stamens united into one bundle by union of their filaments.

MONAD'NOCK, GRAND. See GRAND MONADNOCK.

MONAGHAN, *mŏn'a-ċhan:* inland county of the province of Ulster, Ireland, between Tyrone on the n., Armagh and Louth on the e., Meath and Cavan on the s., and Fermanagh on the w. Its greatest length n. to s. is 37 m.; its greatest breadth, e. and w., 28; 500 sq.m., or 319,757 acres, of which 285,885 are arable. The general surface is undulatory, the hills, except in the n.w. and e., being of small elevation, though often abrupt; the highest point does not exceed 1,254 ft. above the sea. There are many little lakes, usually shallow; and though the streams are numerous, there is no navigable river. In geological structure the level country belongs to the great central limestone district; the rest is of the same

transition formation as in the northern tract of Leinster. No minerals are found in remunerative quantity; there is a small coal-field in the s. border, not profitably worked. The soil is very varied in character, and mostly wet and imperfectly drained, though commonly capable of much improvement; but in general it is suitable for cereal crops (except wheat, which is little cultivated), and of flax. Monaghan is well supplied with good roads, and is connected by railway with Dublin, Belfast, and Galway, and directly with the coast at Dundalk. The Ulster canal passes through the county. Principal towns are Monaghan (q.v.), Carrickmacross, Clones, and Castle-Blarney.—Monaghan, at the invasion, formed part of the grant of Henry II. to De Courcey, and was partially occupied by him; but it speedily fell back into the hands of the native chiefs of the sept MacMahon, by whom (with some alterations of re-conquests) it was held till the reign of Elizabeth, when it was erected into a shire. Even still, however, the authority of the English was in many places little more than nominal, especially in the n.; and in the rising of 1641, the MacMahons resumed the territorial sovereignty. The historical antiquities of the county are of little interest or importance. The name is from Irish *Muinechan*, 'Monkstown,' a monastery having stood here at very early date. Monaghan possesses two round towers, one complete, at Clones, the other at Inniskeen; and there are many remains of the ancient earthworks commonly referred to the ante-English period. Pop. (1901) 74,611.

MONAGHAN, John James: American Roman Catholic prelate: b. Sumter, S. C., 1856, May 23. He was educated at St. Charles College, Md., pursued a theological course at St. Mary's Seminary, Baltimore, and was ordained to the priesthood in 1880. He held several pastorates in Charleston, S. C., and elsewhere, was chancellor of the diocese 1887-8, and assistant to the vicar-general at St. Patrick's, Charleston, 1888-97. In May of the last named year he was consecrated bishop of Wilmington.

MONAL, or Monaul: a name among Anglo-Indian sportsmen for any of several Himalayan pheasants, especially the gorgeous species of the crested genus *Lophopterus*. See Impeyan Pheasant.

MONAMINE: in chemistry, an amine that is derived by replacing one or more of the hydrogen atoms of a single molecule of ammonia by an equal number of monovalent organic radicals. Amines that are derived by joining two, three, or four molecules of ammonia, through the partial replacement of their hydrogen by a single polyvalent radical, are called di-, tri-, and tetra-amines respectively; and the monamines are known as primary, secondary or tertiary, according as one, two or three of the hydrogen atoms of the ammonia molecule have been replaced. See Amine and Amide.

MONANDRIA, n. *mŏn-ăn'drĭ-ă* [Gr. *monos,* alone; *aner* or *andra,* a man]: in *bot.,* a class of plants which have only one stamen. MONAN'DRIAN, a. *-drĭ-ăn,* or MONAN'DROUS, a. *-drŭs,* having one stamen only. MONAN'DRY, n. marriage to one husband only; opposed to polyandry.

MONARCH, n. *mŏn'ârk* [Gr. *monarchos,* one who reigns alone, a monarch—from *monos,* alone; *archein,* to rule: F. *monarque:* It. *monarca*]: the prince or ruler of a country; a king; a sovereign; a potentate; a person or thing superior to others of the same kind: ADJ. supreme; ruling. MONARCHAL, a. *mŏn-âr'kăl,* regal; pertaining to or suitable to a monarch. MONAR'CHIC, a. *-kĭk,* or MONAR'CHICAL, a. *-kĭ-kăl,* of or relating to a monarchy; vested in a single ruler. MONAR'CHICALLY, ad. *-lĭ.* MONARCHIZE, v. *mŏn'ẽr-kīz,* to rule over as a monarch; to play the monarch. MON'ARCHIZING, imp. MON'ARCHIZED, pp. *-kīzd.* MON'ARCHISM, n. *-kĭzm,* principles or state of monarchy. MON'ARCHIST, n. *-kĭst,* an advocate of monarchy. MON'ARCHY, n. *-kĭ* [F. *monarchie,* a monarchy—from Gr. *monar'chĭă,* a kingdom]: state or government in which the supreme power is vested in a single person, being either limited or absolute; a kingdom; an empire. See below.

MONAR'CHIANISM: doctrinal conception by a party in the early church (about 180-320) relative to the nature of Jesus Christ; which, while retaining his office as the Divine and only Redeemer of sinful man, refused to admit more than one person in the Deity. The history of this party is obscure; and there were several groups with varying opinions, which are brought to our knowledge mostly through the representations of their adversaries. Monarchianism has often been divided into: 1. Dynamic Monarchianism, holding that Christ was not pre-existent in God, but was a man fully endowed with divinity by direct communication from God—i.e., that he was empowered as God; 2. Modalistic Monarchianism, holding that Christ was so absolutely God and One with the Father, that he was not a divine distinct person, but the mode of manifestation of the single absolute divine essence. This division is not fully adequate as a classification of monarchian doctrines, though helpful. The monarchians were called also Patripassians (q.v.); and later, Sabellians (see SABELLIUS). Pope Victor I. in the 2d c. excommunicated Theodotus the Tanner who professed the dynamic theory, and an Asiatic synod (268) condemned and anathematized the view as taught by the noted Paul of Samosata, the minister of Zenobia, queen of Palmyra. Monarchianism was revived in the 16th c. by Socinus, and is in some form or other the essential basis of certain Unitarian creeds. See also INCARNATION, and ARIUS—showing subsequent historical developments of the monarchian tenets, and the resulting controversies.

MON'ARCHY: form of government in a community by which one person exercises the sovereign authority. It is only when the king, or chief magistrate of the community, possesses the entire ruling power, that he is properly a monarch. Most of the oriental governments past and present, Russia at present, and Spain and France in the 18th c., are in this strict sense monarchies. The degenerate form of M. is tyranny, or government at the mere will and for the benefit of the ruler. When the head of the state, still possessing the status and dignity of royalty, shares the supreme power with a class of nobles, with a popular body, or with both, as in Britain, the government, though no longer in strictness monarchical, is called in popular language a mixed or limited M., the term absolute M. being applied to a government properly monarchical. The highest ideal of government would perhaps be attained by an absolute M., if there were any security for always possessing a thoroughly wise and good monarch; but this condition is obviously unattainable, and a bad despot is a measureless evil. It therefore becomes desirable that a governing class, composed, if possible, of the wisest and most enlightened in the country, should share the supreme power with the sovereign. A limited M. has this advantage over an aristocratic republic, that in difficult crises of the nation's existence royalty becomes a neutral and guiding power, raised above the accidents and struggles of political life.

M., usually hereditary, has sometimes been elective, a condition generally attended with feuds and distractions, as in Poland. The elective system is still followed in the choice of the pope. Constitutional M. may be in its origin elective, or combine both systems, as when one family is disinherited, and the sceptre declared hereditary in the hands of another under certain conditions. See KING: REPUBLIC: GOVERNMENT: CONSTITUTION, in Politics.

MONASTERY, n. *mŏn'ăs-tĕr-ĭ* or *mŏn'ăs-trĭ* [F. *monastère*—from Gr. *monastērĭŏn*, a place where one may live in solitude—from *monos*, alone: It. *monastero*, a monastery: mid. L. *monastērĭŭm*, a minster]: a religious house for retirement; an abbey; a convent, for either monks or nuns, but more usually the former. MONASTIC, a. *mŏ-năs'tĭk*, or MONAS'TICAL, a. *-tĭ-kăl*, pertaining to monks or to monasteries; secluded from the world; devoted to religion. MONAS'TICALLY, ad. *-lĭ*. MONAS'TIC, n. *-tĭk*, a monk. MONAS'TICISM, n. *-tĭ-sĭzm*, monastic life (see MONACHISM). MONAS'TICON, n. *-tĭ-kŏn*, a book on monasteries.—SYN. of 'monastery': priory; abbey; cloister; convent.

MON'ASTERY: generic name of the residence of any body of men, or more rarely, of women, bound by monastic vows: see MONACHISM. In the Western Church—here had in view—there were various classes of monastic establishments. The name, in its most strict acceptation, is confined to the residences of monks, properly so

called, or of nuns of the cognate orders (as the Benedictine), and as such, it comprises two great classes, the *Abbey* and the *Priory*. The name Abbey was given only to establishments of the highest rank, governed by an abbot, who was commonly assisted by a prior, sub-prior, and other minor functionaries. An abbey always included a church, and the English word *Minster*, though like the cognate German *Münster* it has now lost its specific application, had its origin in the Latin *monasterium*. A *Priory* supposed a less extensive and less numerous community. It was governed by a prior, and was originally, though not uniformly, at least in later times, subject to the jurisdiction of an abbey. Many priories possessed extensive territorial domains, and of these, not a few became entirely independent. The distinction of abbey and priory is found equally among the Benedictine nuns. In the military orders, the names *Commandery* and *Preceptory* corresponded with those of abbey and priory in the monastic orders. The establishments of the Mendicant, and, in general, of the modern orders, are sometimes, though less properly, called monasteries. Their more characteristic appellation is *Friary* or *Convent*, and they are commonly distinguished into *Professed Houses* (called also *Residences*), *Novitiates*, and *Colleges*, or *Scholastic Houses*. The names of the superiors of such houses differ in the different orders. The common name is *Rector*, but in some orders the superior is called *Guardian* (as in the Franciscan), or *Master*, *Major*, *Father Superior*, etc. The houses of women—except in the Benedictine or Cistercian orders—are called indifferently *Convent* and *Nunnery*, the head of which is styled *Mother Superior*, or *Reverend Mother*. The name *Cloister* properly means the inclosure; but it is popularly used to designate, sometimes the arcaded ambulatory which runs around the inner court of the building; and sometimes in the more general sense of the entire building, when it may be considered synonymous with *Convent*.

MONASTIR′: seaport town of n. Africa, dominion of Tunis, on the gulf of Sidra, 80 m. s.s.e. of the city of Tunis. Woolen and camlet fabrics are manufactured, and there is some maritime trade. Pop. 12,000.

MONASTIR, *mō-nâs-tēr′*, Toli-Monastir, or Bitolia: town of European Turkey, cap. of the vilayet of M.; in a broad valley of the Niji Mountains, 90 m. n.n.e. of Janina, and about the same distance w.n.w. of Saloniki. It is an important place, is the residence of the gov.gen., and commands the routes between Macedonia and n. Albania. The inhabitants are mostly Greeks and Bulgarians. M. has 11 mosques. There is large trade with Constantinople, Saloniki, Vienna, and Trieste: from Constantinople alone it annually buys goods to the value of $7,500,000. Its bazaars contain more than 2,200 shops. In 1903, May, the town was the scene of rioting and massacre, in which a considerable number of Bulgarians were killed before the Turkish troops were able to suppress the outbreak.

MONAZITE [Greek, *solitary*, in allusion to its rare occurrence]: a native phosphate of the metals of the cerium group, often also containing more or less thorium silicate. It is reddish or brownish in color, with a resinous lustre, and crystallizes in the monoclinic system, though it also occurs in massive and granular forms. It is commonly translucent and brittle, with a hardness of from 5 to 5.5, and a specific gravity of about 5.0 to 5.2. It is found at Norwich, Conn., and also in the Ural district, as well as in other parts of the world. The chief commercial supply, however, comes from North Carolina and from certain parts of Brazil. In these regions monazite is a constituent of the granitic rocks, and is obtained by washing the gravels and sand that have been formed by the disintegration of those rocks. The Brazilian output has been controlled by a German syndicate since 1902, and practically all of it now goes to Europe. The monazite produced in the United States comes chiefly from Burke and Cleveland counties, North Carolina. The total production of the mineral in this country in 1901 was 748,736 pounds. Monazite owes its industrial importance to the cerium and thorium that it contains, the former being utilized for the preparation of cerium oxalate, which is used in medicine and in the arts, while the thorium is employed in the manufacture of mantles for incandescent gas-lighting.

MONBODDO, *mŏn-bŏd'ō*, JAMES BURNET, Lord: Scottish lawyer and author: 1714-1799, May 26; b. Monboddo, in Kincardineshire. He was educated at Marischal College, Aberdeen, where he showed fondness for the Greek philosophers; and afterward studied law three years at Groningen, Holland. In 1737, he became a member of the Scottish bar, and soon obtained considerable practice. In 1767, he was raised to the bench, as Lord Monboddo. Monboddo's first work on the *Origin and Progress of Language* (1771-76), is very learned, heretical, and eccentric; yet in the midst of its grotesque crotchets there occasionally flashes out a wonderfully acute observation, that makes one regret the distorted and misapplied talent of the author. In the present day the notion that men have sprung from monkeys is perhaps that most associated with the name of Monboddo, who gravely asserted that the orang-outangs are members of the human species, and that in the Bay of Bengal there exists a nation of human creatures with tails, and that men generally have only worn away theirs by sitting on them, but that the stumps may still be felt. Monboddo wrote also *Ancient Metaphysics*, 6 vols. (1779-99).

MONCADA, *mŏn-kâ'thâ*, DON FRANCISCO DE, Conde de Osona: historian, and one of the Spanish classics: 1586, Dec. 29—1635; b. Valencia, where his grandfather was then viceroy. Descended from one of the greatest families of Catalonia, he rapidly rose to the highest offices

in the state, was ambassador to Vienna, and latterly governor of the Netherlands, and commander-in-chief of the Spanish troops there. He fell at the siege of Goch, a fortress in the duchy of Cleves. His *Historia de la Expedicion de Catalones y Aragoneses contra Turcos y Griegos* (Barcelona 1623, frequently reprinted), is a masterpiece in liveliness and elegance of style.

MONCALIERI, *mōn-kâ-lē-ā'rē:* town of Italy, province of Turin, situated finely on the slope of a hill, on the right bank of the Po, five m. above Turin. Moncalieri is the first railway station between Turin and Genoa, and communicates daily with Turin by frequent omnibuses; it has fine buildings, including a palace lately embellished for the residence of King Victor Emmanuel. The annual cattle-fair at Moncalieri, in October, is the most important in n. Italy. Pop. 3,030.

MÖNCHEN-GLADBACH. See GLADBACH.

MONCTON, *mŭnk'ton:* city and port of entry in Westmoreland county, New Brunswick, Canada; at the head of navigation of the Petitcodiac river, a tidal stream entering the Bay of Fundy; and on the Intercolonial railway, 86 miles northeast of St. John, and 185 miles northwest of Halifax. It has a good harbor and an extensive trade in lumber and produce. The tide in the Petitcodiac estuary is one of the most remarkable in the world, coming in with a bore from 4 to 6 feet high and rising to a maximum height of 70 feet. The offices and chief workshops of the Intercolonial railway are here, and there are manufactures of sugar, cotton and woolen goods, leather, woodenware, tobacco, etc. Pop. (1901) 9,026.

MONDAY, n. *mŭn'dā* [AS. *monandæg*, the day sacred to the moon—from *mona*, the moon; *dæg*, a day]: the second day of the week. The name is a translation of the Roman name *Lunæ Dies* (Day of the Moon)—following the Roman custom in naming the days of the week after the planets.

MONDE, n. *mŏngd* [F. world]: a number or circle of people who know and visit each other; the world; society. BEAU-MONDE, n. *bō-mŏngd'* [F.]: the fashionable world. DEMI-MONDE, *dĕm'ĭ-* [F. *demi*, half]: a name given to the so-called higher class of prostitutes in every large town and city.

MONDOVI, *mōn'dō-vē:* town in Cuneo, one of the provinces of n. Italy, on the shoulder of a hill 50 m. s. of Turin. It is divided into four sections: the Piazza and three suburbs. There are manufactures of cloth and silk. The Piazza contains a fine cathedral, with rich paintings; an episcopal palace, with a noble gallery of portraits; and the various judicial and educational halls. At the battle of Mondovi, 1796, Apr. 22, the Sardinians were totally defeated by Bonaparte. Pop. 19,300.

MONEMBRYONY, n. *mŏn'ĕm-brī'ō-nĭ* [Gr. *monos,* one; *embruon,* an embryo]: in *bot.,* the production of one embryo only. MONEM'BRYON'IC, a. *-brĭ-ŏn'ĭk,* having a single embryo.

MONERA, n. plu. *mŏn-ē'ră* [Gr. *monērēs,* solitary]: class of Protozoa (q.v.) proposed by Haeckel to include the very lowest organisms known—mere masses of undifferentiated protoplasm, resembling *Amœba* (see PROTEUS), but unprovided with a nucleus. The monera present specific and even generic distinctions. *Protamœba* and *Protomyxa* are examples of monera. The glairy mud found among the calcareous sediment that covers great part of the bed of the n. Atlantic was formerly referred to the monera, and called *Bathybius,* but Prof. Huxley, who conferred the name, now denies its organic nature. See BATHYBIUS.

MONESIA BARK, *mo-nē'sĭ-a:* bark of a tree (*Chrysophyllum glycyphlœum* or *C. Buranheim*), of the same genus with the Star Apple (q.v.), native of s. Brazil. The bark is lactescent; but when dried, it is thick, flat, compact, heavy, brown, and hard, with a taste at first sweet, afterward astringent and bitter. A substance called *Monesia* is extracted from it, which is almost black, at first sweet, then astringent, finally acrid: it is used as a stomachic and alterative in leucorrhea, chronic diarrhea, etc. It contains, in small quantity, a principle called *Monesin.*

MONEY, n. *mŭn'ĭ* [OF. *moneie;* F. *monnaie,* money—from L. *monēta,* a surname of Juno, in whose temple at Rome money was coined; the mint: It. *moneta* (see MINT, note)]: coin in gold, silver, or copper; stamped metallic pieces, being the legalized currency of a country; anything which passes as a money equivalent, in commercial dealings, e. g., bank-notes (see MONEY, below): wealth; affluence. MONEYS, n. plu. *mŭn'ĭz,* the various sums included in one total; different sums of money. MONEYED, or MONIED, a. *mŭn'ĭd*—the former preferable—rich in money; consisting in money. MONEYERS, n. plu. *mŭn'ĭ-ĕrz,* officers of the royal mint who superintend the coining of money; the men employed in the making of coins for money. MON'EYLESS, a. *-lĕs,* destitute of money. MONETARY, a. *mŭn'ĕ-tĕr-ĭ,* relating to money or moneyed affairs. MONETIZE, v. *mŭn'ĕt-īz* [L. *moneta,* money]: to give a standard value to, in the coinage of a country; to form into coin. MONEY BILL, in *Brit. parliament,* bill or measure before the house of commons for the raising or granting of money for the use of government. MONEY-CHANGER, one who deals in money or exchanges. MONEY-LENDER, one who lends money on interest. MONEY-MAKING, acquiring or gaining wealth. MONEY MARKET, general term for the course or the state of transactions in money, in discounts, loans, and payments, in such places as Lombard Street, London; Wall Street, New

York; the Stock Exchange, the Bank of England, and other banks. MONEY MATTERS, affairs about money. MONEY ORDER, an order, payable at sight, granted by a post-office for any small sum of money, and made payable at certain post-offices—granted on depositing the sum named and the payment of a small commission. MONEY-SCRIVENER, person who procures the loan of money for others. MONEY'S WORTH, full value.—SYN. of 'money': coins; cash; specie.

MONEY: the tool or medium of exchange; hence, in general, anything used by common consent for that purpose; whether animal skins, shells, grain, tobacco, beads, salt, tea, metal or paper, all of which have at times been so used. It is that one commodity singled out by general agreement as an improvement upon the primitive method of exchange by *barter*. The adoption of some common object antedates recorded history; indeed it seems certain that the use of the precious metals as money, which was an important step in the world's progress, is so old with some people that it is probably referable to a period 2,000 years before Christ. The Chinese claim to have used coins 2500 B.C., and in other parts of Asia gold and silver passed by weight somewhat later. Yet in Siam cowrie-shells were legal money until early in this century and beads can still be used in Africa.

Gold, silver and copper proved the most serviceable objects for the purpose. Naturally they first passed by weight, as is conclusively shown by the names of pieces of money that have come down to us: the *pound*, the *lira*, the *peso*, the former *livre*, the ancient Roman *as* and the still more ancient *shekel;* the present *tael* of China is a weight, not a coin. It was important that the money be honest; to eliminate frauds the act of coinage was evolved, by which pieces of fixed weight of metal, duly certified, were provided. Eventually the function of coining was assumed by sovereigns and governments; some of the former were not above cheating by issuing false coin at times.

The qualities which made the metals most acceptable of all commodities are possessed specially by gold; it has value owing to its beauty, for ornamentation, and its relative scarcity; it is practically indestructible, losing almost nothing in melting; it is easily shaped and divided; it is homogeneous; wherever found is the same after refining; it contains large value in small space, hence is portable; moreover, the value is least liable to severe fluctuations. Corn, for example, does not possess these characteristics. Hence, also, gold, even although subject, as are all other commodities, to the law of supply and demand, is altogether the most serviceable, when the further functions and uses of money are considered; these are the *standard* or *measure of value* and the *store of value* for future payments. For these purposes sta-

bility is obviously essential. Perishable or cheap commodities would prove unserviceable.

It was found very early in the world's history that gold was held the superior metal; hence the others were rated accordingly; thus one ounce of gold was held worth four ounces of silver and eight ounces of copper; the *ratio,* as it is termed, has been repeatedly altered, gold steadily advancing in relative value in the long run. This was due in large part to the great increase in production of the inferior metals; their commercial value fluctuated considerably and hence they became less serviceable as value measures. The great increase in the production of gold in recent years has led to the suggestion that it will also have to be superseded in monetary use; but this question need not now be considered.

Copper lost its position as a general money metal among civilized people centuries ago; it continues to be employed merely for the coins of smallest value today. Silver was displaced gradually during the last century, after long-continued agitation, following the disturbance in the exchange relations between silver-using countries and those having the gold standard. The fluctuations in the commercial ratio rendered transactions with the Far East, for example, where silver has for ages been the sole currency, largely speculative. International conferences were held (1878, 1881, 1892) to endeavor to reach a general agreement among nations to remedy the evil; the result was negative, and eventually the leading nations of the western world adopted the gold standard, under the conviction that greater stability of the value measure could thus be attained; most of the other nations adapted their money systems to this change, China being today the only noteworthy exception.

This important step was greatly facilitated by the great increase in the world's gold supply during the last decade, when fully $2,300,000,000 were added to the stock available for money purposes. The far reaching effect of this will be discussed presently.

Money is obviously indispensable to human activity, industrially and commercially; it is necessary that we have tools of exchange of some kind. It is equally important, however, that the provision of such tools be made in a manner which shall permit the proper operation of the value-measuring function of money. This is regulated in a large degree by the volume of the money supply compared with the demands therefor, and is reflected in the *interest rate* (the index of the worth of money) and in *prices.*

We hence naturally find in the economic history of the world periodic struggles against a diminution of the money supply; for the race has learned that absolute dearth of money means distress. The period known as the Dark Ages in Europe was also the period of great money dearth following the disappearance of a large

part of the stock of metals after the lavish era of the Romans. The evil was not entirely removed until after the discovery of America and the transfer of gold and silver from its mines and hoards.

To supplement the metallic supply the important device of paper representatives of money was evolved. (Discussed in detail under CURRENCY, q.v.) For practical purposes this dates from the general introduction of banks, although used to some extent much earlier. Having in mind that such paper, as long as acceptable, is also money, and that the volume of money is an important factor in the measuring of values, the utility of this device, where it actually increased the available supply of good money, cannot be overestimated. The evolution of credit, with the addition of bank notes, checks and drafts, as instrumentalities, was as great a boon as that of the steam engine and its many improvements. This is true notwithstanding the very frequent occurrence of the misuse of the credit function in over-issues of notes and the consequent fraud of depreciated, fluctuating currency imposed upon the people.

The maintenance of credit instrumentalities upon the plane of 'good money' depends upon the holding of adequate reserves of basic money—gold; paper is acceptable so long as people believe that the gold represented can be had; thus the available supply of yellow metal is still the main reliance. The conditions of the demand, and hence the use, are, however, factors of prime importance. Base metal coins have no substantial intrinsic value, yet the absolute need for them in daily life makes them acceptable; so, too, silver and paper. Furthermore, demand is stimulated by an ample supply of good money, which causes low interest rates, encouraging enterprises; the resulting business activity then creates new demands for money and if conditions permit provision of an adequate supply, prosperity continues; usually also prices and wages rise and these again call for more money. It is when the expansion of the money supply has reached its limit that a check upon prosperity is likely to follow. Then demands slacken and the supply becomes redundant; money becomes worth less, because not used; prices and wages fall and 'times become hard.'

Stability of money being dependent upon the adjustment of supply to demand, the question arises, Can this be regulated? To do so it is requisite that the volume of money be susceptible of automatic increase or decrease—elasticity. The two forms of credit money should provide this feature; check-money being dependent as to its volume upon *deposits* in banks and as to its use upon *loans* which express demand, responds very fairly to the requirement; paper money in the shape of notes and silver should also do so, but does not always. Gold is an elastic form to this extent: that if conditions in one

place cause it to be valued lower than at other places (as shown by the relative interest rates), it will move to the place where it can earn more. (See under EXCHANGE.) The adjustment is hence to be affected through the credit-note form of money. France and Canada have apparently reached the highest point of stability; for in the former country a 3 per cent. rate of interest was maintained for seven years and in Canada there are only slight fluctuations, because the bank-note supply is very elastic in volume.

In the following table there is presented, in millions of dollars (and in dollars per capita), the amount of money in the world and separately for Europe and the United States, comparing 1896 and 1906, as reported by the director of the United States mint; also estimates of the banking power, which includes as the chief item the deposits available:

THE WORLD'S MONEY SUPPLY—Million Dollars.

	The World.		Europe.		United States.	
	1896.	1906.	1896.	1906.	1896.	1906.
Gold	4,144	6,483	3,048	4,182	672	1,421
Full-tender silver	3,617	2,107	700	480	556	568
Subsidiary silver	620	1,069	506	802	76	119
Uncovered paper	2,558	3,556	1,496	1,028	424	582
Total	10,939	13,215	5,750	6,492	1,755	2,690
Per capita	$8.62	$9.98	$14.02	$15.50	$24.03	$32.02
Bank power	23,000	39,000	12,600	18,000	7,500	16,500

Uncovered paper signifies the excess of notes over metal reserves. The reduction in volume of full tender silver in the table for the world is due to the fact that the stocks of the silver-using countries are in 1906 estimated at only one-half of the nominal or face value. In Europe a large part of former full tender coin is now subsidiary. The notable increase has been in the gold supply. This has made it possible to increase credit money enormously, stimulating business everywhere and causing conditions of unprecedented prosperity.

In the systems of the several nations the coins vary considerably in weight and fineness, hence in value; but the rating for gold is practically universal at a price expressed in our money at $20.67½ per ounce of pure metal. The equivalent of the chief coins of the world are given under EXCHANGE. Silver is rated in the United States for coinage into dollars at $1.29 per ounce of pure metal; the ratio being about 16 to 1; the commercial ratio valued silver at about one-half (ratio 32 to 1) for many years, although a slightly higher ratio has prevailed for about a year; hence silver coins of the old types are reduced in value practically one-half. But where the weight of these coins is greater than the ratio of 32 to 1 the coin is exported when the price of silver rises. MONETARY SYSTEMS: the world's systems of money are classifiable today into those where gold alone is the

standard, those having the gold standard but with silver as full legal tender money (formerly double standard), those having a theoretic gold standard with silver actually performing the chief money functions at an arbitrary ratio, those having the silver standard, and those which unfortunately have depreciated paper currency. All use bronze coin for the smallest divisional pieces; very many also employ nickel for the minor coins; and most have silver pieces at a lower ratio than for standard silver coins for subsidiary (change) purposes. Subsidiary and minor coins have generally a very limited legal tender power, the former about $10, the latter about 25 cents. Again systems are classifiable according to the size of the units; those having the pound system, approximately a $5 unit, those having the dollar system, those having, since the fall in silver, the half-dollar unit, and those having the franc or about 20-cent unit. The smaller units are rarely coined, as the pieces would be too little for practical use. *Great Britain* is the originator of the pound system; its unit, £, was formerly, prior to 1200 A.D., a pound of sterling silver (.925 fine); but in the numerous changes it came to be a gold piece containing 113.0015 grains pure gold; coinage is at .916⅔ fineness. Silver is subsidiary only since 1815, the *crown* (5 *shillings*) weighing 436.36 grains, .925 fine. Paper currency is provided by banks only. The equivalent of the unit is $4.86⅔. £ = 20 *shillings*, each of 12 *pence*, of 4 *farthings*. *British Possessions: Australia, South Africa* and most of the insular possessions have the identical system. In some of the *British West Indies* and in *British Honduras* the dollar system of the United States is also used; and in *Canada* the money used is dollars and cents, although the £ is legal tender. Here also the paper currency is issued in part by the government and in part by the banks. *Newfoundland* has a dollar slightly better, worth $1.014. *British India*, while having the £ rated at 15 *rupees*, actually uses the old silver system; the arbitrarily fixed value of the *rupee* is 32.4 cents. It is divided into 16 *anna*, each of 4 *pice* of 3 *pie*. Government notes only are used. *Ceylon* has the same system, but the *rupee* is divided into 100 cents. *Straits Settlements* has the old British silver dollar (worth about 50 cents), but is shaping its system upon the model of India with a fixed value to this dollar of about 29 pence, and government notes. *Hong Kong*, because of its proximity to China, has still the British silver dollar, fluctuating in value about 50 cents; it contains 416 grains of silver .900 fine, and is divided into cents. Bank notes are provided. The unorganized African possessions, Borneo, etc., use chiefly bronze pieces. *France:* the originator of the *franc* system, has a unit worth 19.3 cents; the gold piece of 5 francs contains 24.89 grains .900 fine, value 96.5 cents. Silver pieces of 5 francs are full legal tender, of 385.8 grains .900 fine;

smaller pieces are only .835 fine; the franc is divided into 100 *centimes*. Paper currency is furnished solely by the Bank of France. *French Possessions: Algiers* and *Tunis* have the franc system and a local bank issues notes. So also the *French West Indies* and *Guiana*. *Madagascar* is provided with French coins, and other African possessions use them and large quantities of bronze pieces. *Indo-China* has a silver dollar, called *piaster*, of 416⅔ grains .900 fine, fluctuating value about 50 cents, divided into 200 *sapeques*. A bank issues notes. For many years the French system has been used by four other countries next named and has been adapted by the several others following. *Belgium: franc*, 19.3 cents, divided into 100 *centimes;* notes issued by one bank. *Switzerland: franc*, 19.3 cents, divided into 100 *centimes;* until 1907 notes were furnished by 34 banks; now one central bank has the exclusive right. *Italy: lira*, 19.3 cents, divided into 100 *centimes;* three banks and the government issue notes. *Greece: drachma*, 19.3 cents, divided into 100 *lepta;* government and bank notes depreciated; present gold premium about 33 per cent. *Spain: peseta*, 19.3 cents, divided into 100 *centimos;* one bank issues notes; depreciated paper standard; gold at about 14 per cent. premium. *Bulgaria: lev*, 19.3 cents, divided into 100 *stotinki;* government and bank notes, slightly depreciated. *Servia: dinar*, 19.3 cents, of 100 *paras;* one bank issues notes; not always at par. *Roumania:* gold standard; *lei*, 19.3 cents, of 100 *bani;* one bank issues notes. *Portugal: milreis*, of 1,000 *reis*, worth $1.08, the unit; gold standard; milreis contains 27.369 grains .916⅔ fine; silver subsidiary, milreis of 385.8 grains, also .916⅔ fine; one bank issues notes, depreciated; gold premium about 3½ per cent; £ is legal tender at 4½ milreis. For *Mozambique* and *African* and *Asiatic* possessions special coins are furnished. *Germany: mark* = 23.8 cents; gold standard; theoretic unit 6.15 grains .900 fine; silver subsidiary, 5 marks = 428⅔ grains .900 fine; notes issued by the government and by 8 small banks, in small amounts; chief issue by one central bank. *Mark* = 100 *pfennige*. For its possessions, chiefly African, rupees and a large amount of bronze coins, *heller* and *pesas*, are coined. *Austria-Hungary:* new system 1892; *krone* = 100 *heller;* gold standard; value of unit 20.26 cents; theoretic gold content 5.33 grains .900 fine; smaller pieces .835 fine; one bank issues notes. *Netherlands: florin* or *guilder* = 40.2 cents; full legal tender silver in use; *rixdaler*, 2½ florins, 385.8 grains .945 fine; theoretic gold unit 10.37 grains .900 fine; smallest silver, subsidiary, only .640 fine; florin divided into 100 cents; one bank issues notes. Identical system for *Java, Dutch Guiana* and other colonies. *Russia:* gold standard; *ruble* of 100 *copecks* = 51.45 cents; gold ruble contains 13.276 grains .900 fine; subsidiary silver ruble 308.58 grains .900 fine; smallest pieces are only .500 fine; notes issued

by one bank owned by the government. *Finland: markka* of 100 *penni* = 19.3 cents (same as franc); gold standard; one bank issues notes. *Scandinavian Union, Sweden, Norway* and *Denmark: krone* = 100 *ore,* value 26.8 cents; gold standard; unit is theoretically 6.91 grains .900 fine; subsidiary silver krone 11.74 grains .800 fine; smaller pieces .600 and .400 fine. Single banks issue notes, the one in Norway owned by the government. *Danish West Indies* have a mixed system. *Turkey:* £T = $4,396, divided into 100 *piasters* of 40 *paras;* gold standard nominal; unit, also called *lira,* is 111.366 grains gold .916⅔ fine; silver .830 fine; 20 piaster piece 371.225 grains; one bank issues notes. *Egypt:* £E = $4.943, divided into 100 *piasters* of 10 *ochr-el-guerche* each; gold standard, unit being 131.175 grains .875 fine; silver 20 piaster piece is 432.106 grains .833⅓ fine: a British chartered bank issues notes; British, French and Turkish gold coins are legal tender. *Morocco: piaster* or *rial* of silver = 46.8 cents, but variable; weight 385.8 grains .900 fine; divisional pieces .835 fine; French system approximated; no paper currency. *Tripoli: mahbub* of silver = 20 *piasters,* same as Turkish but fluctuating. *Zanzibar* has nominally a dollar system; but, as in *Abyssinia* and *Eritria, rupees* and other coins, especially *talari* (Austrian trade dollars), of silver, fluctuating at about 48 cents, are largely used. *Persia:* silver standard; unit *kran,* 71.06 grains .900 fine, fluctuating value about 8½ cents; gold piece is *toman* 43.98 grains .900 fine, value $1.70; *toman* = 10 *krans* of 20 *chais;* one bank issues notes. *Arabia* has also mixed coins, rupees largely used; *Mauritius, Afghanistan, Burmah, Baluchistan,* also have rupees; in *Turkestan* and *Siberia* rubles come into play. *Siam* has now a gold standard with silver currency; the *tical* (of 4 *salung* each of 2 *fuang*) = about 30 cents; government paper is to be used exclusively. *China: tael* of 1,000 *cash;* silver standard; tael fluctuating at about 80 cents; there are many kinds of taels varying in weight; a projected coinage of dollars and cents has not yet been carried out; Mexican and British dollars are also used; the Hong Kong and other banks issue notes; gold standard under discussion. *Japan:* now gold standard; *yen* = 100 *sen* of 10 *rin* each; unit is theoretically 12.86 grains .900 fine, value 49.8 cents; silver is .800 fine; one bank issues notes. In *Korea* the same *yen* system has now been introduced by the Japanese. *Philippines:* the United States has introduced the gold standard with arbitrarily fixed silver currency; *peso* (theoretic) of gold = 12.9 grains .900 fine, value 50 cents; silver peso was 416 grains .900 fine; now reduced to .700 to prevent exportation; arbitrary value 50 cents; divided into 100 *centavos;* government issues silver certificates and one bank issues notes. *Brazil: milreis* of 1,000 *reis* = 54.6 cents; gold standard, unit is theoretically 13.83 grains gold .917 fine; silver milreis 196.76 grains .917 fine;

actual money depreciated government notes and nickel coin; gold premium 100 per cent., but falling. *Uruguay:* gold standard; *peso* = 100 *centavos,* value $1.034; unit contains 26.188 grains .916⅔ fine; silver peso same as 5-franc piece, 385 grains .900 fine; several banks, some with foreign charters, issue notes. *Argentina: peso* = 100 *centavos;* depreciated paper standard at fixed rate for gold: 127.27 per cent. premium; gold peso would be 24.89 grains .900 fine, value 96.5 cents; the silver one the same as the 5-franc piece; notes are all issued by the government. *Paraguay: peso* of 8 *reals* or 100 *centavos;* depreciated government paper standard; gold premium about 800 per cent.; theoretic coin the same as Argentine. *Chile: peso* = 100 *centavos;* gold standard, but depreciated paper; gold premium about 8 per cent.; gold peso, theoretic, is about 9.25 grains .916⅔ fine, value 36.5 cents; silver peso is 308.65 grains .835 fine; government issues notes. *Peru:* gold standard, no paper; *libra* (£P) of 123.27 grains .916⅔ fine = $4.86⅔; subsidiary silver, *sol* (and divisions) 385.8 grains .900 fine; *libra* = 10 *sols,* and the latter = 10 *dineros. Ecuador:* nominally gold standard; *sucre* of 5 *pesetas,* or 10 *reals,* or 100 *centavos;* contain 385.8 grains silver .900 fine; gold piece is 10 *sucres,* 125.56 grains .900 fine, value $4.86⅔; bank notes are used. *Bolivia:* silver standard, *bolivianio* of 100 *centavos* is 385.8 grains .900 fine (like 5-franc pieces), fluctuating value about 48.7 cents; smaller coins exact divisions; bank notes are used. *Colombia:* new system; gold standard; *peso* 25.8 grains .900 fine, value $1; divisions are 5 *pesetas,* or 10 *reals,* or 100 *centavos;* silver half peso is 425¾ grains .900 fine; enormous amounts of depreciated paper in use; gold premium has been as high as 30,000 per cent.; a central bank is reorganizing the currency. *Venezuela: bolivar* = 20 *centavos,* value same as franc, 19.3 cents; *venezolano* of 5 *bolivars* is 24.98 grains gold .900 fine, value 96.5 cents; bank notes are in use. *Panama: balboa* of 2 *pesos* each, divided into 100 *centavos;* gold standard; unit is 25.8 grains .900 fine, equal to $1. *Costa Rica:* gold standard; unit is *colon* of 12 grains .900 fine; value 46.5 cents; divided into 100 *centimos;* bank notes are used. *Guatemala, Nicaragua, Honduras, Salvador: peso* of silver, same as 5-franc piece; fluctuating value 46.5 cents; bank and government notes in the two first named, at a large discount; bank notes in the two latter, well sustained. *Mexico:* recently adopted gold standard with silver currency; gold *peso* of 100 *centavos* = 26.11 grains .875 fine, value 49.1 cents; silver peso (old Mexican dollar) 417.8 grains .902.7 fine; banks issue notes. *Cuba:* Spanish system, *peseta* 19.3 cents, divided into 100 *centimos;* no paper issues; United States money largely used; as also in *San Domingo,* where the dollar has been legally established. *Porto Rico,* of course, has the system of the United States. *Haiti:* nominally gold standard with

gourde for unit; is 24.89 grains gold .900 fine, value 96.5 cents; silver *gourde* same as 5-franc piece, 385.8 grains .900 fine; smaller pieces are .835 fine; depreciated government paper standard; gold premium 400 to 600 per cent. *United States:* gold standard with full legal tender silver; unit, *dollar* of 100 *cents*, each of 10 *mills;* in gold 25.8 grains, in silver 412½ grains, subsidiary at 385.8 grains to dollar, all .900 fine; government notes, gold certificates, silver certificates and bond-secured bank notes are used; in the United States prior to their independence the British system, somewhat modified by the Spanish, prevailed; when the new government was organized under the constitution, in 1789, steps were at once taken to formulate a distinct system; the Spanish silver dollar being more nearly the actual unit was used as a model and a coin of 416 grains .8924 fine, was provided for by the law of 1792 as the unit; in gold the dollar was to be theoretically 27 grains .916⅔ fine, thus giving a ratio of 15 to 1 between the metals; divisional silver pieces were made full legal tender as well as the chief ones; in 1834, the ratio was altered by changing the weight and fineness of the gold coin, and a correction in 1837 finally gave the ratio of 16 to 1 (accurately 15.988 to 1), which still exists; the theoretic gold dollar is 25.8 grains .900 fine; the silver dollar was made 412½ grains, also .900 fine; in 1853, divisional pieces were reduced in weight about 7 per cent. to prevent exportation; in 1873, the silver dollar coinage was discontinued, but resumed on government account in 1878, $2,000,000 of silver being purchased monthly; in 1890, purchases were doubled; in 1893, the purchase was suspended; by 1905, all the silver had been coined and no dollars have since been struck; the coins are as follows: Gold: $20, $10 (*eagle*), $5 and $2.50; formerly also $3 and $1, both discontinued in 1892; silver: $1, 50, 25 and 10 cents; formerly also 20, 5 and 3 cents, to 1873; minor coins are nickel (copper 75 per cent., nickel 25 per cent.), 5 cents, formerly also 3 cents, and 1 cent, bronze (95 per cent. copper, 5 per cent. tin and zinc), 1 cent, formerly also 2 cents, and prior to 1857 both 1 cent and ½ cent were coined of pure copper; paper currency in the period 1791 to 1811, state bank notes and United States bank notes; 1811 to 1816 state bank notes, generally depreciated; 1816 to 1836 again United States bank notes added; 1836 to 1864 state bank notes periodically depreciated; 1862 government notes introduced with legal tender power, depreciated to 1879; 1864 bond-secured bank notes also depreciated, to 1879, except gold issues on Pacific slope; 1865 gold certificates (renewed 1882 and 1900); 1878 silver certificates; 1890 treasury notes, since 1893 gradually converted into silver certificates; amount in use 1907, July 1: United States legal tender notes $346,681,016; treasury notes $5,988,000; silver certificates $475,777,000; gold certificates $678,244,869; national bank notes $603,788,690; total

paper $2,110,479,575; of gold there was $1,602,014,642; silver dollars $562,263,530; subsidiary silver $130,560,377; of the aggregate supply of $4,405,318,124, there was gold and silver represented by certificates $1,154,921,869; the treasury had $236,953,998; leaving outside $2,914,342,256, or $33.86 per capita; our 'supplementary money,' represented by deposits in bank subject to check (excluding, therefore, those in savings banks), is estimated at $9,000,000,000, or more than $105 per capita, having increased from about one-half that amount since 1899; in other words, the expansion, unquestionably stimulated by the increased gold supply, has been approximately 100 per cent. in eight years; the growth in the volume of business, as represented by clearing-house operations, has been somewhat less; the volume of loans, indicating the demand for money, has also doubled; and the record of prices indicates a rise of from 90½ to 108, a change of 17½ points, or nearly 20 per cent.

Money Market: the money market is not, as might be surmised from the term, a distinct place where money is bought and sold; it signifies the condition of the money supply as indicated by the loans, and interest or discount rates. These rates are determined by the bankers, and there are brokers who carry out the loan transactions; but they do not congregate at a given place as other brokers do.

Since money has the tendency to flow to the place where it can earn most, the money market is in one respect international; and in this respect it is dominated by London, where exists the greatest accumulation of capital; although Paris, Berlin, and New York are also very important factors. The general view of the international movement of money is given under Exchange; it remains to be said, however, that the moving force depends very largely upon the status of the reserve of gold in the Bank of England against its deposit liability, which it aims to hold above 40 per cent. When the reserve falls the discount rate rises, and this is substantially a bid for gold. If at the other centres it is desired to prevent gold from going out to England, rates must be advanced or the reserves protected otherwise. When that is done the bank can only get the new gold coming from the mines, for the greater part of which London is the natural market.

In the United States bank loans are classifiable into mortgages, ordinary commercial discounts of promissory notes and drafts, time loans secured by collateral of bonds and stocks, and demand loans payable 'on call' secured in the same manner. It may be said generally that all of the last mentioned class, and most of the secured time loans also, are made to stock exchange operators.

There is a distinct tendency to the accumulation of money in the chief center, New York, even though rates

are normally lower there than at interior points. This is stimulated by the fact that the banking laws favor the practice of interior banks keeping one-half or more of their resources in the centre; by the payment of interest on these interior bank balances by New York banks; by the prospect of higher rates when speculation in stocks is active; and finally the absence of funds from home enables interior banks to maintain a higher rate of interest on local loans.

Banks in New York hold 25 per cent. reserve against deposits; every loan is in effect a deposit, since the sum loaned is placed to the credit of the borrower, against which he may draw checks. Thus the loaning capacity is measured by the reserve status.

The stock market offers a practically continuous opportunity for loaning money; it is hence natural that the country's surplus funds should flow thither. The 'call loan' rate is thus the index of the volume of the surplus funds available. The demand for money from the other sources fluctuates very considerably, and practically by seasons; thus in the summer and fall, when the crops are to be garnered and moved, more money is needed than in the other half of the year; the extra sum is estimated at about $150,000,000. It is during the slack business season that money begins to accumulate in New York, and the surplus is frequently so large, and hence the competition to lend it out so great, that the rate for money 'on call' falls abnormally low, 2 per cent. being usual and a minimum of ½ per cent. occurring at times.

This cheap money stimulates speculation, and if continuous, overspeculation is certain to follow, prices of stocks rise and a 'bull market' is on. When later in each year the interior banks need their funds, the city banks must call their loans and frequently stocks must be sacrificed; this selling lowers prices of stocks and a 'bear market' is caused. Stringency is sometimes so acute as to drive money to 25, 40, 60 and 100 per cent.; the record high rate is 186 per cent., i.e., the legal 6 per cent. and a commission of ½ per cent. per day, in order not to infringe the usury law. Such a condition is frequently followed by panics. While these extreme rates pertain only to call loans, the rates for other loans are also affected thereby. Manifestly, however, the rising rates tend to restrain speculation.

When very low rates prevail it is logical that gold should tend to go abroad, money being then apparently in excess here; when the high rates are asked gold is frequently imported or loans are made abroad by international banks which accept the collateral. Most frequently, however, the government lends its aid; for under our fiscal system the federal treasury accumulates large surpluses of cash which are thus drawn from the channels of trade; under the law these may, however, be returned to use by depositing in banks, properly secured by bonds.

Obviously, $20,000,000 placed in banks helps materially, as it serves as reserve for at least $80,000,000 in loan deposits.

The index of the existing or the prospective money market in New York city is the statement of the condition of the banks, which is published weekly and observed by all interested in the rates for money. In recent years it has not been so important a guide or indicator, because so large a volume of the business of loaning is now done by trust companies which make no such reports. Still the 'bank statement' has not lost its influence and is regarded as a factor only second to that of the Bank of England. The New York statement is, however, one of averages for the week, not the actual condition upon the day it is issued.

In the following table the chief elements of the bank statement and deductions therefrom are given for a recent critical period in the New York money market (in the spring of 1907); the figures represent millions of dollars:

	Week ending				
	Mar. 9.	Mar. 16.	Mar. 23.	Mar. 30.	Apr. 6.
Loans	1,067	1,054	1,050	1,056	1,063
Deposits	1,020	1,004	1,002	1,020	1,037
Cash reserve	257	254	255	268	278
Reserve required (25% of deposits)	255	251	250	255	259
Surplus reserve	2	3	5	13	19
Call money rates (per cent.)	6-6¼	5¼-25	6-5	14-5	4½-2½

The situation on March 9 was so critical, the reserves having fallen so nearly to the limit, that in the following week the rate for call loans was raised materially; this caused a diminution of loans and of the deposit liabilities, hence also of the reserve required. The conditions continued critical in the following week, although rates did not go higher than 6 per cent. In the week ending Mar. 30 money rose to 14 per cent.; but the situation was relieved by the deposit with the national banks of considerable sums of government money by the treasury; this served to restore the cash reserves and increase the surplus, whereupon rates promptly fell again; call loans were made in the week thereafter as low as 2½ per cent.

During the period nearly one-half the banks actually carried less than 25 per cent. cash reserves; in some instances very much less. The stock market showed very heavy declines in prices, sufficient to be recorded as a 'slump.'

Rates for money at interior points are ordinarily (and normally) considerably higher than those in New York, showing, according to distance from centres, variations all the way from 4 per cent. to 12 per cent.; even 15 per cent. and more is sometimes exacted as a customary charge in the places least sufficiently provided with banking facilities. See GOLD; SILVER; CURRENCY; COINAGE; MINT; BULLION; LEGAL TENDER; BANK NOTES; BONDS;

CONTINENTAL CURRENCY; BIMETALLISM; FINANCE; STOCKS; CLEARING HOUSE; BANK—BANKING; EXCHANGE; COMMODITY EXCHANGE; FOREIGN EXCHANGE; CURB MARKET; TRUST COMPANIES; SAVINGS BANKS; DEBTS, NATIONAL; etc. See also NUMISMATICS.

MONEY, PAPER: a money issue of a nation or government; a stamped sheet of paper, silk, linen, or parchment, given an official value and used as a medium of exchange. Although coins were used before paper money, the latter was known among the ancients. Corn, cattle, iron, leather, cocoa, shells, tobacco, and other commodities were all, in point of fact, used as money, in different ages and different countries; but they have long ceased to be so used, by commercial nations. The scarcity of gold and silver, the need of bills of exchange, and the want of a money more convenient for the individual to carry, and lastly, the issuance of government credits forced on bankrupt nations, brought about the use of paper money in European countries, and Colonial America early adopted this medium of exchange from the English.

Provincial Paper Money.—In the earliest days of America paper money was first issued by Massachusetts in 1690. The object was not to supply any supposed want of a medium for trade, but to satisfy the demands of some clamorous soldiers. Other issues were subsequently made, partly with a view of defraying the expenses of government, and partly with a view of making money plenty in every man's pocket. The ill-judged expedition of the Carolinas against Saint Augustine, in 1702, entailed a debt of 6,000 pounds on that colony, for the discharge of which a bill was passed by the provincial assembly for stamping bills of credit, which were to be sunk in three years by a duty laid upon liquors, skins, and furs. For five or six years after the emission, the paper passed in the country at the same value and rate as the sterling money of England. To defray the expenses of an expedition against the Tuscaroras, and to accommodate domestic trade, the legislature of South Carolina established a public bank in 1712, and issued 48,000 pounds in bills of credit, called bank-bills, to be lent out on interest on landed and personal security, and to be sunk gradually at the rate of 4,000 pounds a year. Soon after the emission of these bank-bills, the rate of exchange and the price of produce rose, advancing in the first year to 150, and in the second to 200 per cent. By the year 1731 the rate of exchange rose to 700, at which it continued with little variation upward of 40 years. In the year 1723 the province of Pennsylvania made its first experiment of a paper currency. It issued, in March, 15,000 pounds, on such terms as appeared likely to be effectual to keep up the credit of the bills. It made no loans but on land security, or plate deposited in the loan office; obliged the borrowers to pay 5 per cent. for the

sums they took up; made its bills a tender in all payments, on pain of confiscating the debt, or forfeiting the commodity; imposed sufficient penalties on all persons who presumed to make any bargain or sale on cheaper terms in case of being paid in gold or silver; and provided for the gradual reduction of the bills, by enacting that one-eighth of the principal, as well as the whole interest, should be annually paid. These early specimens of provincial paper money were large notes, printed from copper-plates, having engraved borders on three sides. The inscriptions on the bills were in type, with arms or motto engraved in the left side centre. The signatures of the province officials were always signed in red ink.

Continental Money.—The first issue of paper money under the authority of the continental congress was dated 1775, May 10, but the notes were not actually placed in circulation until the August following. On May 31, 1781, the continental bills ceased to circulate as money, but they were afterward bought on speculation at various prices, from 400 for one, up to 1,000 for one. The value of continental paper was not the same in different parts of the country. The exchange was, for example, at 35 for one in New England, New York, the Carolinas, and Georgia, and at 40 for one in Pennsylvania, New Jersey, Delaware, Maryland, and Virginia. An account taken from the books of merchants in Virginia shows that the depreciation there regularly followed that in Philadelphia, though, toward the close, it sometimes lagged a month or more behind. Thus when exchange was in Philadelphia at 100 for one, in 1781, Jan., it was in Virginia at 75 for one. As late as 1781, May, speculations were entered into at Philadelphia to purchase continental money at 225 for one, and sell it at Boston at 75 for one. It is worthy of remark that the depreciation of continental money never stopped the circulation of it. As long as it retained any value at all it passed quick enough; and would purchase hard money or anything else, as readily as ever, when the exchange was 200 for one, and when every hope, or even idea of its being ultimately redeemed at nominal value had entirely vanished. The facility of raising ways and means, in the early part of the revolutionary war, by issues of paper, led to much extravagance in the commissary department, and prevented the establishment of a sound system of finance.

Connecticut.—Under date of 1762, Mar. 4, Connecticut issued a series of colonial notes of the following values: 9 pence, 1 shilling, 2 shillings and 6 pence, and 10, 20, 30, and 40 shillings. There were 19 regular issues, the last being dated 1780, July 1. There were also three single bills in the nature of treasury notes, the last dated 1791, Jan. 26. Over 100 different bills were issued by this colony. The smaller values were for 2, 3, 4, 5, and 7 pence, issued 1777, Oct. 11. In Connecticut the 6 shilling

bill was not infrequently raised by clever counterfeiters to the value of 10 shillings.

Delaware.—In this colony paper money was issued as early as 1735. One value only of these notes has been preserved to us, although doubtless many others were in circulation; the denomination is 10 shillings. The designs of the early issues are all about the same, a type body with a border of the same and wood cut of the royal arms. On Feb. 28, 1746, a new series was issued of the same general design, but noteworthy from having been printed by the celebrated Benj. Franklin and his partner, D. Hall. On bills of this colony we first get the information that 'To Counterfeit is Death,' which is repeated in every possible form, ' 'Tis death to counterfeit,' 'To counterfeit is death,' 'It's death to counterfeit this bill,' 'Death to counterfeits,' etc. The 2 shilling 6 pence bill of 1776, Jan., issue is adorned with pillars, and probably to show that the edifice supported can stand any sort of usage, one is placed upside down. The last series issued, 1777, May, contains bills from 3 pence to 20 shillings, and changed the cut of the royal arms for that of the state. Sixty bills emitted by this colony are known.

Georgia.—The earliest bill printed in Georgia was of the value of 2 shillings 6 pence, and was dated 1749, Mar. 7. The Georgia bills were printed on one side of white paper and were usually made attractive by copper-plate vignettes printed in various colors. The vignettes represented figures of liberty, soldier, deer, hog, rattlesnake, palmetto tree, etc. The last issue was dated 1786, Oct. 16. There are over 110 varieties from 3 pence to 5 pounds.

Maryland.—The first bill of this colony is dated 1740 and of the value of one shilling. This was followed by a series of five values in 1748, and from then a regular succession of issues until their final extinction in 1781. The design of the early issues may be described as the arms of Lord Baltimore supported by two men in the costume of the day, one with a fish and the other with a spade. This is differently placed on the various bills. The lettering or form of contract is in the following words, 'This indented Bill of Eight Dollars shall entitle the bearer to receive Bills of Exchange payable in London, at the Rate of Four Shillings and Six Pence Sterling per Dollar for the said Bill, according to Directions of an Act of Assembly of Maryland, Dated in Annapolis, this 1st day of January, Anno Domini 1767,' followed, of course, by two signatures. The quaint idea of scalloping the end of a legal document to show that it has been prepared with due care and thought, and not cut off in a hurry, is carried out on these bills. In some values even the word 'indented' is printed in a wavy line, and that there should be no mistake as to what is meant by a dollar, a minute representation of a Spanish dollar is inserted in the text. The values of the Maryland bills

were 3, 4, 6 and 9 pence, and so on up to 3 pounds. There were over 100 varieties issued.

Massachusetts.—Prior to 1775, some 13 examples of paper money were issued in this colony. One of these is a copper-plate engraving said to have been the work of the noted patriot Paul Revere, of Boston. The series was issued by order of the general assembly of the colony of Massachusetts Bay 1775, Dec. 7. The reverse of these bills bears the figure of a man in continental dress, with a drawn sword in one hand and a copy of the Magna Charta in the other, above 'Issued in defence of American Liberty,' below in Latin, 'He seeks by the sword calm repose under Freedom.' The series of 1776, Oct. 16, repudiates the title of colony for that of state. Coin must have become scarce, as more than half of the denominations are under 1 shilling. The codfish was the principal design on these bills. The next issue of eight values was of interest-bearing notes which are guaranteed by the United States. Upward of 135 bills were issued by Massachusetts.

New Hampshire.—The design of the New Hampshire bills was usually the British arms with inscriptions in elaborate frames. The earlier issues were type-set. About 60 varieties are known.

New Jersey.—The issues in this colony began in 1724, Mar., and continued regularly to 1786, May. In shape the bills were a small, narrow oblong. The high value notes were printed in blue and red. In 1781, the royal arms became the arms of the state, the type reading as follows: 'State of New Jersey, Five Shillings. This bill shall pass for Five Shillings agreeably to an Act of the Legislature of this State, passed the ninth day of January, One Thousand Seven Hundred and Eighty-one.' An entire collection of New Jersey bills would number 185.

New York.—The first bill issued was in 1709, and then followed a series of four dated 1737, Dec. 18. In the next issue the form reads: 'By a Law of the Colony of New York this Bill Shall Pass current for Three Pounds New York the 20th April 1756.' A set of United States guaranteed notes appeared 1780, June 15.

North Carolina.—The earliest notes were dated 1748, and upward of 120 varieties were printed up to 1780. The most of the North Carolina bills bore motto inscriptions, such as 'Virtuous Councils the Cement of States'; 'A Righteous Cause the Protection of Providence'; 'A Lesson to arbitrary Kings and wicked Ministers'; 'Liberty and Peace the Reward of Virtuous Resistance'; 'Persecution the Ruin of Empires'; 'Union of Hearts the Strength of Interests'; 'American Virtue Triumphant'; etc.

Pennsylvania.—The earliest known bill was dated 1723, Aug. 10, and was printed by Benj. Franklin. The general style of the notes is the same as used in Delaware,

bearing the royal arms, or in 1756 those of Wm. Penn, with his motto, 'Mercy Justice.' In 1764, a curious notion was adopted of spelling the name of the colony differently on each bill, thus on the series we find Pennsylvania, Pensylvania, Pennsilvania, and Pensilvania. On some of the notes issued in 1771 is the signature of Francis Hopkinson, and on the bills of April of the following year that of John Morton, both signers of the Declaration of Independence. In 1777, the shape of the bill changes to the oblong form, and the arms of Pennsylvania take the place formerly devoted to those of Great Britain. This series are found both in black, and red with black type. In 1780, a set guaranteed by the United States, of the same design as issued for other states, was put in circulation, and on Mar. 16, 1785, the last of the series saw the light, the denominations running from 3 pence to £4, 16 values in all. The varieties issued by this colony were over 250.

Rhode Island.—The paper money of Rhode Island was similar in design and value to that of Connecticut. The first issue was in 1715 and the last in 1786. There were about 75 varieties.

South Carolina.—There were various notes issued in this colony from 1712 to 1770. The bills dated 1776, Mar. 6, were supposed to have the value of silver; equivalent in currency is given thus, 6 Spanish milled dollars = £9 15s. currency. In 1779, appeared the handsomest notes heretofore used in the country, the backs of the $50, $70 and $90 bills representing Atlas, Prometheus and Hercules being especially noteworthy. The total number of bills for South Carolina was 105.

Vermont.—In this colony there were but two series, the first issued in 1781, Feb., is an ordinary type-printed note, with engraved border on three sides, with the state seal about the centre. This consists of a pair of scales and a chain of fourteen links (the only instance where the number is carried above the original thirteen) enclosed in a circular band inscribed 'Vermont Calls For Justice.' The second issue are in the form of treasury notes, the amounts being filled in with ink.

Virginia.—The first issue for this state was in 1755. The notes are of two varieties, the first a fine, large bill after the English style, and then something between a draft and a bank-bill, being probably made to fill a pressing want. The bills are copper-plate engravings, filled out in ink. On the issue of 1775 are the royal arms of Virginia in an engraved frame. The lettering reads: 'Three Pounds Current Money of Virginia Pursuant to Ordinance of Convention Passed 17 July 1775.' The following year introduces the 'sic semper tyrannis' in place of the arms.

Bank Notes.—From the revolutionary period to the days of the civil war and to the present time, many issues of paper money have been made by the government, and

by national, state and local banks. See BANK—BANKING; MONEY; CONTINENTAL CURRENCY.

Confederate Paper Money.—During the civil war the southern states in secession issued millions of dollars in paper money, beginning in 1861, July, with bills of from $5 to $100. On these were designs of the Confederate flag, a train of cars, cotton bales, etc. In 1861, Sep., appeared at least 50 varieties of bills in value from $5 to $100. They were of various designs. A $20 bill showed a head of Alexander H. Stephens in one corner; a $10 bill pictured General Marion offering a breakfast of sweet potatoes to a British officer. Portraits of Davis, Hunter, Memminger, Stephens, Mrs. Pickens, Mrs. Davis, Benjamin, Gen. Jackson, and others, appeared on the high value notes. There was an issue of $1 and $2 bills in 1862, and in 1863, Apr., appeared a series in value from 50 cents to $100. Some of these bore designs of the capitol buildings at Richmond, Nashville, Montgomery, etc. The last issue of bills from 50 cents in value to $500 appeared 1864, Feb. 17.

Postal Currency.—The United States government printed a paper money as a substitute for fractional currency during the civil war, owing to the scarcity of silver. This was invented by General Spinner, United States treasurer under Lincoln, and was commonly known as 'shin-plaster' money. The issue was in small scrip of the denominations of 3, 5, 10, 25 and 50 cents. It disappeared from general circulation about 1870.

Greenbacks, Silver and Gold Certificates.—The more recent issues of American paper money in circulation at the present day are printed at the Bureau of Engraving and Printing at Washington. The engravers are specialists, and the figures and intricate designs of their work are often marvels of artistic skill. Portraits of living persons are never put on the notes, and all the figures, vignettes, borders, etc., are engraved separately before they are put on the plates. First the engraver works out his design, and after transferring it by hand to a plate of soft steel the plate is hardened and a soft steel roller takes the impression from it. After this roll is chilled another impression is taken on another steel plate, and after this latter has been hardened it is ready for use. The geometric lathe which makes the border is a complete and wonderful piece of mechanism. The lines for the borders, backs and other conventional designs seen on the notes are made by this machine. The paper for printing the bank-notes is manufactured under the supervision of government officials. It has two perpendicular lines of short, uneven silk threads running through it.

Foreign Paper Money.—The notes of the Bank of England are 5 by 8 inches in dimensions, and are printed in black ink on Irish linen water-lined paper, plain, white, with ragged edges. The notes of the Bank of France are made of white water-lined paper, printed in blue and

black, with numerous mythological and allegorical pictures. South American currency is about the size and appearance of the American. The German notes are printed in green and black. The Chinese paper money is in red, white and yellow, with gilt lettering and various devices. Italian notes are printed on white paper in pink, blue, and carmine, and ornamented with a vignette of King Humbert.

MONGE, *mōngzh*, GASPARD, Comte de Péluse: French mathematician and physicist: 1746, May 10—1818, July 28; b. Beaune, dept. of Côte d'Or; of humble parentage. When only 15 years of age, he went to study natural philosophy at the Oratorian College of Lyon, and afterward obtained admission into the famous artillery school at Mézières, where he invented the method known as 'Descriptive Geometry.' In 1780, he was chosen a member of the French Acad., and was called to Paris as professor of hydrodynamics. During the heat of the revolution, he became minister of marine, but soon took charge of the great manufactories for supplying republican France with arms and gunpowder. After he had founded the Ecole Polytechnique, he was sent by the directory to Italy. Here he formed a close friendship with Bonaparte, whom he followed to Egypt; and undertook the management of the Egyptian Institute. On his return to France, he resumed his functions as professor in the Ecole Polytechnique, and, though his reverence for Napoleon continued unabated, he hotly opposed his aristocratic and dynastic views. The title of Comte de Péluse (Pelusium) was conferred on him by Napoleon. He died at Paris. Monge's principal works are: *Traité Elémentaire de Statique* (7th ed. Paris 1834); *Leçons de Géométrie Descriptive;* and *Application de l'Analyse à la Géométrie des Surfaces du 1 et 2 Dégré.*

MONGER, n. *mŭng'gėr* [Icel. *mangari*, a dealer—from *manga*, to chaffer, to trade—from *mang*, barter: Dut. *manghelen*, to exchange]: a dealer; a trader—now used only as the second element in a compound, as *fish-monger.*

MONGHYR, *mon-ghēr'*, or MUNGIR, *mŭn-ghēr':* city of India, cap. of a dist. in Bahar, Lower Bengal; picturesquely situated on the right bank of the Ganges, 30 m. w.n.w. of Bhagulpur. It is a large and thriving town, and carries on manufactures of hardware and firearms. It was formerly a fortress of great natural strength, and is a favorite residence of invalided military men and their families. Pop. 36,000.

MONGOLIA, *mŏn-gō'lĭ-a:* country in Asia, a dependency of China proper, extending from the great wall on the n. of China to Siberia, and from Manchuria on the e. to the Altai Mts. and Turkestan on the w.; lat. 37°—54° n., long. 85°—125° e.; about 1,300,000 sq.m.; since 1368 subject to the emperors of China, but originally the fatherland of the Mongols (q.v.), whose chieftain, Gen-

ghis Khan (q.v.), created an empire of unexampled extent (1227), and whose grandson, Kûblai Khan (q.v.), became the founder of a Mongol dynasty of China (1279-1368). One-fifth of the inhabitants are Chinese of China proper, who have pressed into Mongolia from the s. side of the great wall. Mongolia is a vast plain, about 3,000 ft. above sea-level, almost without wood and water, and has as its centre, and a third of its area, the desert of Gobi (q.v.) or Shamo, 'sand-sea.' It is divided into four principal regions: 1. Inner Mongolia, with the great wall on the s., the desert on the n., and on the e. to the Ala-shan (mts.); 2. Outer Mongolia, from the w. end of the desert to the Altai Mts.; 3. A s.w. district w. of the Ala-shan range; and 4. The n.w. region about Uliassutai, a considerable town in a well-cultivated valley. The Altai Mts. send subordinate ranges, the Tangnu-Oola and Ken-teh, eastward through n. Mongolia; and the Ala-shan, In-shan, and Khingan ranges reach across e. Mongolia, running n.e. and n. into Manchuria. The rivers Kerulen, upper Nonina, and Argun, in the n.e. of Mongolia, mark the original camping-ground from which the Mongol tribes spread. The Selenga, Orkhon, and Tola are n.-central streams flowing into Lake Baikal. The Hoang-Ho or Yellow river crosses the s.e. region. In the n.w. region lakes abound, of which Lakes Kossogol, Ubsa, and Ike-aral are of considerable size. The very dry air and extreme elevation of Mongolia give a climate so excessively cold that the mercury often remains frozen for several weeks. The winter lasts nine months, and during the short summer there are sometimes days of stifling heat, though almost never without cool nights. Sudden and great changes are common at all seasons. The soil of Mongolia is mostly poor, and is difficult of cultivation on account of the little rain or snow falling anywhere except near the mountain ranges. In the s. part of Mongolia, where the Chinese have come in largely, and introduced regular cultivation of the ground, to which the nomad Mongols are not addicted, tillage appears to have made possible crops which formerly would not ripen. These Chinese immigrant agriculturists are causing many of the native Mongols to give up the s. part of Mongolia, while many others have changed from a nomad to a settled life. The vast plains and mountain ranges of Mongolia are abundantly supplied with wild animals: the elk, stag, goat, ass, yak, two species of tiger, the brown and the black bear, wolves so fierce that they will attack the shepherd rather than his flock, foxes, hares, and squirrels; pheasants and eagles, the latter so favored that they make their nests in any place without fear, almost as if domesticated. The chief property of the native Mongols is in horses, cattle, sheep, and the double-humped or Bactrian camel, which is both domesticated and wild, and as a domestic animal yields large supplies of milk, butter, and cheese. Chinese and Russian trade, entering

Mongolia through the border-town of Kiakhta, introduces European goods. The religion of Mongolia was changed in the 13th c. from a species of Shamanism to Lamaism akin to that of Thibet; and the country abounds in the lamaseries or monasteries of Lamaism, solidly built with stone and brick, adorned with carvings, sculpture, and paintings, well endowed, and in those of the first rank having in residence a living Buddha who is worshipped as a divine incarnation. Pop. of Mongolia 2,580,000.

MONGOLIAN, n. *mŏn-gō'lĭ-ăn:* native or inhabitant of *Mongolia* (see MONGOLIA; MONGOLS): ADJ. term applied to one of the great divisions of mankind, having the Mongols and Chinese as the type; term applied sometimes to the whole class of Turanian tongues; sometimes specifically to that group spoken by the Kalmucks and other tribes from Thibet to China. MONGOL, or MONGOLE, a. *mŏn'gŏl* [native Tartar name]: of or belonging to Mongolia. MONGOLIDÆ, n. *mŏn-gŏl'ĭ-dē:* name given by Dr. Latham to what Blumenbach, Cuvier, and others had called the Mongolian race.

MONGOLS, *mŏng'gŏlz:* term, with an inconvenient variety of applications, for larger or smaller groups of Asiatic races or tribes. In Blumenbach's fivefold classification of mankind the Mongols were one branch, as in Latham's threefold division the Mongolidæ constituted one. In this sense the Mongols correspond to those races speaking Turanian Languages (q.v.); and see ETHNOLOGY; PHILOLOGY)—almost all the Asiatic peoples not Aryan or Semitic. Thus taken, the name Mongolic may be used for the yellow type of man, as distinguished from the Caucasic or fair type, but should not be understood as implying racial relationship, or direct connection between their languages. They have been thus grouped: 1. Tibeto-Burman; 2. Khasi, and 3. Mon (in Assam and Pegu); 4. Tai (including Siamese, Shans, and Laos); 5. Sinico-Annamitic (Chinese, Tonquinese, etc.); 6. Koreo-Japanese; 7. Ural-Altaic; and 8. Malayan. The seventh group, Ural-Altaic, embraces Mongols in the stricter sense; as well as Tungûs (q.v.) and Manchus (see MANCHURIA), Turkish races (see TURKESTAN; TURKS), Samoyedes (q.v.) and Ugrians, including Finns (q.v.) and Hungarians. The Mongols proper fall into an eastern branch, inhabiting Mongolia (the n. section of the central-Asian plateau, between the Kuen Lun and the Altai (q.v.) system, including the Shamo desert, and divided into e. and w. Mongolia); a western branch, of which the Kalmucks (q.v.) are the principal representative; and the Buriats on the slopes of the Altai, e. and w. of Lake Baikal. The e. Mongols, who occupy the original seat of the race, remain the most characteristic of the race; of whom the Khalkhas, in the n. of Mongolia, are the chief tribe. They are thoroughly nomadic, living in tents of felt, and moving about when the pasture has all been

used. They are frank, hospitable, [illegible], and (though their ancestors were long the terror of the world) peaceable, but lazy and dirty. Their wealth is in flocks of sheep, camels, horses, and cattle; and they live mainly on flesh, milk, cheese, and butter. They pay yearly tribute to China, and have Chinese colonists scattered among them. See MONGOLIA.

The face of the typical Mongolian is broad and flat, because the cheek-bones stand out laterally and the nasal bones are depressed. The eyes are oblique and wide apart. The eyebrows are scanty. The iris is dark, the cornea yellow. The complexion is tawny, the stature low. The ears are large, standing out from the head; the lips thick, the forehead low and flat, and the hair lank and thin. Of course, this does not apply to the more civilized nations of Mongolic affinities, such as the Turks and Magyars, especially the latter, who, in physical appearance, differ little from other European nations. The name of Tartar, or rather Tatar, belonged originally to the Mongols proper, but passed later to the Turks and Tungusic peoples.

Early in ancient history we find a Turanian race (Accadians—perhaps Turkish) constituting the more cultured section of the Babylonian state. Another great offshoot from the Mongolic stock founded an empire in China. In early Greek history, the Mongols or Tatars figure as Scythians, and in late Roman history as Huns, carrying terror and desolation over the civilized world. The history of the Mongols begins in the 13th c., when Genghis Khan, originally the chief of a small Mongol horde, gradually united various Mongol and Tatar tribes, and conquered almost the whole of central and eastern Asia. For his conquests, see GENGHIS KHAN. His sons and grandsons were equally successful, and 1240-1 the Mongol empire extended from the seaboard of China to the frontiers of Germany and Poland, including Russia and Hungary, and the whole of Asia, with the exception of Asia Minor, Arabia, India and the Indo-Chinese states, and n. Siberia. The cap. was Karakorum (q.v.). In the bloody battle of Wahlstatt in Silesia (1241), Germans and Poles checked the westward course of the orientals. The Mongols became partly Buddhists, partly Moslems; and the vast empire soon broke up into a number of independent kingdoms (see KUBLAI KHAN; KIPTCHAK). The Mongols were driven out of China 1363, and in the 15th c. their domain in Russia ceased. From Turkestan, however, arose another tide of Mongol and Turkish invasion, under the guidance of Timûr (q.v.) or Tamerlane, who, in the later part of the 14th c., reduced Turkestan, Persia, Hindustan, Asia Minor, and Georgia under his sway, and broke, for a time, the Turkish power. This empire was finally absorbed by the Persians and Usbeks; but an offshoot of Timûr's family founded, in the 16th c., the great Mongol empire of Delhi, hence

called Mogul or Mughal, another way of writing Mongol (see BABER). After the decline of Timûr's empire, the Turks spread terror to the very heart of w. Europe. In the 9th c., the Magyars, a tribe of Ugrians, established themselves in Hungary. See TURKS; OTTOMAN EMPIRE; HUNGARY.

For the various Mongoloid peoples, their character, language, and religions, see the numerous titles referring to them or to the countries where they are found. The most recent ethnological and philological schemes exclude from the Mongolic or Mongoloid group various races or stocks formerly accounted Mongol, or even called Turanian. Thus the Dravidian and Kolarian races of s. India are set down as of doubtful affinity; also the Singhalese, the Khmer in Cambodia, the Ainos in Yesso, the Chukchis, Koriaks, Kamtchadales in Siberia.

The first five groups of the Mongolic races use the languages known as Isolating or Monosyllabic (see PHILOLOGY), though no positive relationship can be proved to exist between the main divisions of these tongues; the remaining groups have the tongues known as agglutinating. The languages of the Ural-Altaic peoples (to which the name of Turanian may with advantage be confined) are now generally held to be fundamentally related, and are typically agglutinative. It seems less clear that the nations who speak them are of one blood, as much intermixture with Caucasic peoples has brought great diversity of type. The Korean and Japanese, also agglutinative, show no affinities to the Ural-Altaic speech.

In religion, a large portion of the Mongoloid peoples are Buddhist (see BUDDHISM—BUDDHA; LAMAISM, under LAMA), though heathenism, Mohammedanism, and Christianity have their followers. The Mongols proper are mainly Buddhist; many are Shamans (see SHAMANISM), and some of the Buriats have conformed to the Greek Church. See Howorth, *History of the Mongols* (1880); Gilmour, *Among the Mongols* (1883).

MON'GOOSE, or MUN'GOUS (quadruped). See ICHNEUMON.

MONGREL, a. *mŭng'grĕl* [It. *mongrellino*, of mixed breed: Dut. *menghen*, to mingle—with the dim. termination *rel*]: of a mixed breed; of different kinds: N. an animal of a mixed breed, particularly a dog.

MON'ICA, SAINT: mother of Saint Augustine (q.v.): b. Africa, 332; d. Ostia, 387. A Christian who, in accordance with the wishes of her parents, also Christians, married a pagan. She devoted nearly all her life to the conversion of her husband and son Augustine. Her self-sacrifice was at last rewarded; her husband, Patricius, became a Christian, and Augustine, seeing the error of his ways, reformed. After the baptism of Saint Augustine at Easter, 387, she set out with her two sons for Africa. Arriving at Ostia she became ill and here died.

A friend asked her in Ostia if she were not afraid to be buried in a place so far from her own country. She replied: 'Nothing is far from God.' Her eminent son preserved many of her holy sayings, which he often repeated in his sermons. In the Roman Catholic Church she is regarded as the model and patroness of wives and mothers. Her feast is May 4. Consult: *Saint Augustine's Works,* edited by Tillemont; Butler, *Lives of the Saints.*

MONIER-WILLIAMS, Sir MONIER: English Sanskrit scholar: b. Bombay, 1819, Nov. 12; d. Cannes, France, 1899, Apr. 11. He was a son of Monier-Williams, surveyor-general. He was educated at Oxford, and was for a short period a student at the East India College, Haileybury. He was professor of Sanskrit at Haileybury from 1844 to the extinction of the college in 1858, and in 1860 became Boden Sanskrit professor at Oxford, a post which he held till his death. Among his numerous works are: *Practical Sanskrit Grammar* (1846); *English-Sanskrit Dictionary* (1851); edition with notes, translations, etc., of the Sakuntalā (1853); *Introduction to Hindustani* (1858); *Indian Epic Poetry* (1863); *Sanskrit-English Dictionary* (1872, 2d edition 1899); *Indian Wisdom* (1875); *Hinduism* (1877); *Modern India and the Indians* (1878); *Religious Life and Thought in India* (1883); *The Holy Bible and the Sacred Books of the East* (1886); *Brahmanism and Hinduism* (1889); *Reminiscences of Old Haileybury College* (1894).

MONILIFORM, a. *mŏn-ĭl'ĭ-fawrm* [L. *monīlĕ,* a necklace; *forma,* shape]: like a necklace; jointed or united so as to resemble a string of beads.

MONIMENT, n. *mŏn'ĭ-mĕnt* [see MONUMENT, of which it is another spelling]: in *OE.,* a memorial; a record; an image.

MONIMIACEÆ, *mŏn-ĭm-ĭ-ā'sē-ē:* a natural order of exogenous plants, consisting of trees and shrubs, with opposite leaves destitute of stipules; the bark and leaves having an aromatic fragrance. There are about 40 known species, natives chiefly of South America. The fruit of the BOLDU (*Boldoa fragrans*), a shrub or small tree, a native of Chili, is eaten.

MONISM, *mŏn'ĭzm* [Gr. *móros,* single]: in philosophy, the view which maintains the ultimate unity of all forms of existence; opposed to PLURALISM or MONADISM, which holds that ultimate reality consists of a plurality of independent entities or monads. Most great philosophers have been monists of one sort or other; e.g., Plato, Aristotle, Spinoza, Fichte, Hegel. Leibnitz and Herbert are usually classed as pluralists, but, in truth, the distinctions between philosophers in this regard depend on where the emphasis falls in their systems. Philosophy is essentially a search for a unified view of things, and it carries farther the belief in the ultimate coherence of things, in a universe or cosmos, which belief is the presupposition of

practical activity and is progressively verified by science. Some philosophers, such as Spinoza, tend to submerge individual beings in the One. Others, such as Leibnitz, emphasize the reality of the individual, while holding to an ultimate unity. The task of metaphysics is to preserve the balance between an abstract monism, which reduces the individual to an illusion, and a pluralism, which reduces the world-order to chaos. A special form of monism is PSYCHO-PHYSICAL MONISM, which asserts the identity of mind and body, in opposition to DUALISM (q.v.), which holds that they are separate interacting entities. See also PARALLELISM (psycho-physical).

MON'ITA SECRE'TA SOCIETA'TIS JES'U: work by an unknown author, purporting to be a collection of secret instructions for the Jesuit order; published first at Cracow 1612, in Latin, from the Spanish; often republished since in various languages. In the 17th c. it was regarded as genuine by Prot. historians generally. The almost universal verdict of recent scholarship is that the work is either a forgery or a satire. See JESUIT.

MONITEUR, LE, *lĕh mo-nĭ-tėr':* French journal of wide repute, started by the publisher, Charles Joseph Panckoucke, 1789, May 5, under the title *Gazette Nationale, ou le Moniteur Universel.* During the Revolution its importance immensely increased. In 1800, it divided itself into halves, of which the first contained the *Actes du Gouvernment:* this change imparted to the journal something of an official character. After 1811, Jan. 1, it dropped the title *Gazette Nationale,* retaining the title *Moniteur Universel.* After the restoration, it became the government organ, which it continued to be until 1869, when its official connection was discontinued.

MONITION, n. *mō-nĭsh'ŭn* [F. *monition,* admonition—from L. *monitĭōnem,* counsel, advice]: instruction given by way of caution; warning: in *English ecclesiastical courts,* the lightest form of church censure, in the form of an order whose disregard entails the penalties of contempt of court. MONITIVE, a. *mŏn'ĭ-tĭv,* warning; admonitory. MONITOR, n. *mŏn'ĭ-tėr* [L.]: one who warns of faults or gives instruction in regard to duty; an older boy in a school who assists the master—the girl who does so is called a MONITRESS, *mŏn'ĭ-trĕs:* one of a family of lizards (see below): an iron steam-vessel of war having its guns in a raised turret (see TURRET-SHIP). MON'ITO'RIAL, a. *-tō'rĭ-ăl* [F.—L.]: of or relating to a monitor; teaching by monitors. MON'ITO'RIALLY, ad. *-lĭ.* MON'ITORSHIP, n. *-tėr-shĭp,* the office of a monitor. MONITORY, a. *mŏn'ĭ-tėr-ĭ,* giving or containing warning or advice.

MONITOR, THE: an ironclad, the first of a class of naval vessels designated as monitors. It was designed and built for the United States government in 1861-2 under the direction of the engineer John Ericsson (q.v.), who adopted as the most essential feature of its con-

struction the revolving gun-turret devised by the American inventor Theodore Ruggles Timby (q.v.). The *Monitor* was launched at Greenpoint, L. I., 1862, Jan. 30, only 100 days after the laying of her keel. She put to sea Mar. 6 following, under command of Lieut. John L. Worden (q.v.), arriving on the night of the 8th at Hampton Roads, Va.

The *Monitor* was built by a company of men, John F. Winslow and John A. Griswold of Troy, N. Y., and their associates, who were actuated by patriotic motives. With T. R. Timby, who had taken out patents 'for revolving towers for offensive or defensive warfare whether placed on land or water,' they entered into a contract for the use of his inventions covering the revolving turret, paying him $5,000 as royalty on each turret constructed by them. They built the *Monitor* at their own risk, Winslow and Griswold furnishing 90 per cent. and C. S. Bushnell of New Haven, Conn., 10 per cent. of the cost. Ericsson, for his services as engineer, received 5 per cent. of the gross sum paid to the company for the *Monitor* and kindred vessels built by them. A contract with the government was made by the company and Ericsson, and the government paid for the *Monitor* $275,000, the actual cost being $195,000.

The contract with the government provided for the building of 'an iron-clad, shot-proof steam battery of iron and wood combined,' and the hull of the *Monitor* was of iron with wooden deck-beams and side-projection. Her dimensions were:

Extreme length	172 ft.
Extreme breadth	41 ft. 6 in.
Depth of hold	11 ft. 4 in.
Draft	10 ft. 6 in.
Inside diameter of turret	20 ft.
Height of turret	9 ft.
Thickness of turret	8 in.
Thickness of side-armor	5 in.
Thickness of deck-plating	1 in.
Diameter of propeller	9 ft.
Diameter of steam cylinders (two)	36 in.
Length of stroke	2 ft. 2 in.
Displacement	1,255 tons.

Armament, two 11-in. shell-guns, each 15,668 pounds.

In all the models, drawings, and plans of his invention made by T. R. Timby himself, the pilot-house or 'look-out' was placed on top of the turret. 'For some inexplicable reason,' he has said, 'the *Monitor* had her pilot-house placed upon the deck, forward of the turret, in the way of her own guns.'

The success of the *Monitor* aroused much interest in all maritime nations, and was the direct cause of many modifications in the construction of vessels in the navies of Europe, though nowhere except in the United States navy was the monitor adopted as a distinct type of war-ship. During a gale off Cape Hatteras 1862, Dec. 31, the *Monitor* was sunk.

MONITOR.

The contract for the construction of the *Monitor* was entered into by the navy department in the hope that she could be completed before the *Merrimac*, then building by the Confederates at the Norfolk Navy Yard, could be finished, and that the *Monitor* would be able to cope with this formidable ironclad. The *Merrimac*, called by the Confederates the *Virginia*, was being reconstructed upon the hull of the United States frigate *Merrimac*, of 3,200 tons, which had been sunk, when the Norfolk Navy Yard was abandoned by the Union forces, and was subsequently raised by the Confederates. Her armament was two 7-in. rifles, two 6-in. rifles, and six 9-in. smooth-bores.

Each side was aware of the effort of the other to be first ready for active service. The Confederates won by a day. At noon, 1862, Mar. 8, the *Merrimac*, attended by two gunboats, *Raleigh* and *Beaufort*, each one gun, was discovered coming out of the Elizabeth river into Hampton Roads (q.v.) and standing toward the Union fleet off Newport News and Fort Monroe, composed of the steam-frigates *Minnesota*, *Roanoke*, and *Congress*, each 50 guns; the sailing-frigate *St. Lawrence*, 12 guns; and the sloop *Cumberland*, 24 guns. Their armament was mainly 8-in. and 9-in. guns, with several 10-in. pivot guns. These vessels had the heaviest batteries which the government had been able to assemble to watch the *Merrimac*. The latter bore down directly upon the *Congress* and *Cumberland*. At less than a quarter of a mile the *Congress* delivered her broadside, her heaviest shot making no impression. The return-fire of shells crashed through her sides with terrible effect. Passing the *Congress* at 300 yards, the *Merrimac* received the fire of the heaviest guns of the *Cumberland* without the slightest harm resulting, and without replying she drove her iron prow through the side of the Union frigate, crushing it, and at the same time pouring in a fire of shells. Leaving the *Cumberland* rapidly sinking, the ironclad steered for the *Congress*, which had been run ashore, and from a point 150 yards astern raked her decks with shells which caused general destruction and set the ship afire. The *Congress* was obliged to surrender. The *Cumberland* fired a broadside as the water reached the gun-deck, and went down with her flag flying. As she sank, the Confederate steamers *Patrick Henry*, 12 guns, and the *Jamestown*, 2, came out of the James river and joined the *Merrimac*. The *Minnesota* had grounded where the *Merrimac* could not approach within a mile, and her firing was so bad that only one shot struck the frigate. The other Confederate vessels were finally driven off after inflicting much damage with their rifled guns. After several hours' ineffectual attempts to reach the *Minnesota*, the *Merrimac* and attending gunboats returned to Norfolk. Several shore-batteries which had attempted to help proved as useless as the batteries of the frigates had been. The *Congress*

continued to burn, and finally blew up. Over half the crew of the *Cumberland* were lost. The crew of the *Congress* were made prisoners, but, with the exception of the officers, were released. The total loss was some 250, the Confederate loss was nominal. The battle of an afternoon had ended the day of wooden navies.

The reports of the destruction by the *Merrimac* caused consternation at Washington, and in the coast cities and, indeed, throughout the North. Secretary Stanton ordered all preparations made for obstructing the channel of the Potomac far below the capital, and warned those in charge of coast-defenses to use every means that could be devised for protection.

Meantime the *Monitor*, in command of Lieut. John L. Worden, had left New York and after a rough voyage, entered Hampton Roads at 9 o'clock the night after the battle. At 2 o'clock on the morning of the 9th she had anchored alongside the *Minnesota*. At 6 o'clock the *Merrimac* appeared bearing down on them, but at first passed by, gained the channel in which the *Minnesota* lay, and then steamed directly toward her. The *Monitor* swept in between the two and steered for the *Merrimac*. At close quarters the latter brought her bow-guns to bear and missed. There was little to fire at except the low turret with a cross-section of 20 ft. The first reply of the *Monitor* was a solid 11-in. shot which shook the *Merrimac* from stem to stern. The answer was a broadside, some of the shot of which struck the turret, either glancing or falling as harmless as the shot of the frigates the day before had proved against the *Merrimac*. Then followed broadside after broadside without producing the slightest effect on this 'cheese-box on a raft,' as spectators described it. At every opportunity of maneuver the *Monitor* closed in and smote with her 11-in. solid shot, bending the heavy armor and straining the timbers of her adversary. Finally the *Merrimac* left the *Monitor* and crowded steam for the *Minnesota*. Upon reaching point-blank range she received a full broadside, and a shot from a 10-in. pivot gun, without suffering the slightest damage. In reply she raked the *Minnesota* with a shell, set her afire, blew up a tug alongside, and but for the *Monitor*, which had followed under full steam, and now swept in between the two, the *Minnesota* would have shared the fate of the *Congress* and *Cumberland*. In changing position to meet the *Monitor* the *Merrimac* grounded, and the *Monitor* continued hammering with 11-in. shot. As soon as the *Merrimac* was floated she started rapidly down the bay, pursued by the *Monitor*. Suddenly she turned and attempted to run the *Monitor* down. The blow she struck with her prow glanced, and the *Monitor* was unharmed. The *Merrimac* then started for the *Minnesota* for the purpose of ramming her; but when within easy range the *Merrimac*, with all the Confederate ships, changed course at noon and headed for

Norfolk. Her officers subsequently gave as a reason that in attempting to ram the *Monitor* her iron prow was broken, and their vessel was leaking. The armor was reported damaged, the stem twisted, the muzzles of two guns shot away, and the steam-pipe and smokestack riddled. The casualties were only 2 killed and 19 wounded. The consternation of the day before at Washington and the North was transferred to Richmond and the South. Preparations were hastily made by the Confederates for blocking the channels in the Elizabeth and Nansemond rivers, and to obstruct the channel of the James.

The *Merrimac* did not again engage the *Monitor,* and after the evacuation of Norfolk, which occurred May 9, she was destroyed by the Confederates.

The *Monitor* had hurried direct from her shipyard to Fort Monroe and fought without a previous trial-trip, and before she had been accepted by the government.

MONITOR, *mŏn'ĭ-tẽr:* name given to many species of saurian reptiles, nearly allied to the true lizards, from which they differ in having no teeth on the palate. Among them are some of large size, the largest of existing saurians except those of the crocodile tribe. The tail of the greater number is laterally compressed, the better to adapt them to aquatic habits. They receive the name monitor from a notion that they give warning by a hissing sound of the approach of a crocodile or alligator. For the same reason, some of the American species receive the French name *Sauvegarde.* Those of the old world form the family of *Monitoridæ,* and those of America the family *Teiïdæ* of some naturalists. There are several genera of both.—The monitor or VARAN OF THE NILE (*M. Niloticus*) is of rather slender form, and has a long tail: it is olive gray, mottled with black. It attains a length of 5 or 6 ft. Crocodiles' eggs form part of its food.—The TEGUEXIN (*Teius Teguexin*) of Brazil and Guiana is of similar size: it preys on aquatic animals. Other large species are plentiful in almost all tropical countries. They are powerful animals, have strong teeth, and defend themselves vigorously if attacked. Some comparatively small species, feeding chiefly on insects, are found in dry situations. Some of the large South American species are used for food. A well known kind is the East Indian monitor (*V. salvator*), which is to be met with from Ceylon and Western India to the Philippines, and is equally at home in the water, on land or in trees. Its rapacity is great and varied; and it is connected with many extraordinary rites and superstitions among the natives, some of which are given in Fennent's *Sketches of the Natural History of Ceylon* (1861). Australia has a large species (*V. gouldi*). Most of these greenish-gray lizards inhabit rivers and ponds, and are active and fierce enemies of all lesser aquatic life. They feed upon the eggs and young of crocodiles, turtles and aquatic birds; and on fishes, amphibians, swimming-birds.

MONITORIAL SYSTEM.

MONITO'RIAL SYSTEM, or MUTUAL INSTRUCTION: method of organizing schools and providing the requisite teaching power; applied first by Andrew Bell, D.D. (q.v.), when supt. of the Orphan Hospital, Madras, 1795. He made use of the more advanced boys in the school to instruct the younger pupils: these youthful teachers were called Monitors. The method was eagerly adopted by Joseph Lancaster, who in the first years of the 19th c. did so much for the extension of popular education in England; and from him and the originator, the system was called indifferently the Madras and the Lancastrian as well as the Monitorial or Mutual System. At a time when the whole question of primary education was in its infancy, the state refusing to promote it on the ground that it was dangerous to society, and the public little disposed to contribute toward its extension, it was of great importance that a system should be adopted which should recommend itself as at once effectual and economical. It was manifest that even with the most skilful arrangement of classes, a single teacher could not undertake the tuition of more than 80 or 90 pupils; while, by the judicious employment of the cleverer boys under the general direction of the master, the school might be made almost self-working, and 300 or 400 children taught where there was only one adult superintendent. The novelty and economy of this plan of using more advanced scholars as helpers to the adult teacher, who could thus extend his number of pupils from 80 or 90 to 300 or 400, commended the system at a time when public primary education was deemed by many an expensive luxury; and the M. S. gained large and enthusiastic support in Britain and in Germany. But the value of the system was much overrated; for though technical and rote subjects may be taught by monitors, yet children so instructed are not in any sense of the word educated. Their monitor necessarily lacks the maturity of mind indispensable to the instructor, whose business it is to arouse the mental activity of the child, and to lead him to an intelligent grasp of intellectual and moral and physical truths. Thus as education took a more scientific development, the M. S. was largely discarded. The reaction against the system, however, was not so violent in Great Britain or in Holland and France, as in Germany. In England, and to a small extent in the United States, the M. S. is in use in a modified form which secures for the master the aid of the more advanced pupils in teaching rote subjects, in revising lessons, keeping registers, and supervising and reporting the work of a limited number of classes. The M. S. in this very restricted application affords means of training for the teaching profession pupils who seem fitted by natural endowment for the work. Hence the prevalent employment in Britain of paid monitors and pupil-teachers (male and female), regularly apprenticed to school-managers and teachers, and in time going onward to be trained in normal schools.

MONK, n. *mŭngk* [Ger. *Mönch;* L. *monăchus;* Gr. *monăchos,* a solitary, a monk—from Gr. *monos,* alone; *ĕchō,* I keep]: one who devotes his life exclusively to religious concerns, and lives under a certain rule or discipline—generally in a community or order in a monastery; a recluse; a solitary one (see MONACHISM: MONASTERY). MONK'ISH, a. *mŭngk'ĭsh,* pertaining to a monk, or like one. MONK'HOOD, n. *-hŭd,* condition or character of a monk. MONKERY, n. *mŭngk'ĕr-ĭ,* monastic life, in reproach. MONK'S-HOOD, a poisonous plant—so named from the cowl-like shape of the flowers; the aconite; the *Aconītum napellus,* ord. *Ranunculāceæ* (see ACONITE). CLOISTER MONK, one who lives in the monastery. EXTRA-MONK, one who lives outside and serves a church connected with the monastery. MONK-FISH (see ANGEL-FISH). MONK'S-RHUBARB, a species of water-dock, the *Rumex alpīnus,* ord. *Polygŏnācĕæ* (see DOCK). *Note.*—As regards persons living secluded from the world in religious houses, the males are called *monks,* and the females *nuns;* the residence of a monk is called a *monastery,* and that of a nun a *nunnery* or *convent.*

MONK, *mŭnk,* GEORGE, Duke of Albemarle: 1608, Dec. 6—1669, Dec. 3; b. Potheridge, near Torrington, Devonshire; second son of Sir Thomas M. of Potheridge. He spent some of his earlier years in the service of Holland, returned to England when about the age of 30, and served in the king's army against the Scots 1639, attaining the rank of lieut.col. On the breaking out of the Irish rebellion, 1642, he was appointed col. of Lord Leicester's troops, sent to crush it. When the civil war began, these troops were recalled, and M. was imprisoned on account of being supposed to favor the cause of the parliament, but was soon released. In 1644, he was defeated and taken prisoner by Fairfax, in command of the parliamentary army, and imprisoned in the Tower, from which he was liberated, after two years, on his swearing the covenant. Clarendon hints that he sold himself for money. He was now intrusted with the command in n. Ireland. Cromwell had a high opinion of his military talents, and made him his lieut.gen. and commandant of artillery; and the service which he rendered at the battle of Dunbar was so great, that he was intrusted with the chief command in Scotland. In 1653, he was joined with Admiral Blake in an expedition against the Dutch, and with his division of the fleet, consisting of 100 ships, defeated Admiral Van Tromp off Nieuwpoort, and fought another and very sanguinary battle with him off Katwijk, in which the victory was doubtful, but Van Tromp lost his life. 1654, April, Cromwell sent him to Scotland as gov., in which difficult office he conducted himself with vigor, moderation, and equity. Even the highlands, those immemorial 'sanctuaries of plunder,' as Guizot calls them, were reduced to order. Finding Cromwell's chief opponents in Scotland to be the Presb. clergy, he reduced their prerogatives, and disallowed their general assemblies, leaving them their local presbyteries. His

principal residence was Dalkeith, where he spent his leisure hours in gardening, of which he was very fond. When, after Cromwell's death, he saw everything in confusion, and felt his own position perilous, he crossed the English border, 1660, Jan. 1, with 6,000 men, united his troops with those which Fairfax had collected for Charles II., and entered London unopposed, though as yet he kept his views and intentions profoundly secret. His powers of dissimulation, self-control, and reticence were immense. Everybody felt that the decision lay with 'Old George,' as his soldiers used to call him; every party courted him; he was even offered the protectorate; but while he offended nobody, he declined to connect himself with any of the sectaries, and with trained evasion withheld a clear expression of his own judgment regarding the restoration, and waited patiently the course of events. His own secret wish (though it did not proceed from any very high-minded motive) was to bring back the Stuarts; and before long, he saw that the nation in general was thoroughly with him, and was indeed looking to him for leadership in the recall. So, 1660, Feb. 21, he called together the remaining members of the parliament which had been violently driven out 12 years before, and Charles II. was presently recalled. The king after his restoration made M. Duke of Albemarle, loaded him with honors, and intrusted him with the highest offices in the state. But he soon retired from political affairs. In 1665, when the plague ravaged London, and every one fled that could, 'Old George,' as gov. of the city, bravely stuck to his post, and did what he could to allay the terror and confusion. Next year, he was employed as second in command of the fleet sent under the Duke of York against the Dutch; and was defeated by Von Ruyter in a sea-fight off Dunkirk, but soon afterward gained a bloody victory over him off North Foreland.—M., as he appears in history, was a man of great abilities, with wonderful patience and self-restraint; yet as a man whose principle in all public action was to wait for the tide, and to be found with it, and as it were leading it, when it rose. His selfishness was never brutal, never reckless; but it was deep and abiding. He gives no sign of any vulgar vaulting ambition, any more than of a glowing patriotism. His rare self-possession seems to have supplied an element serviceable to the state in those times of universal excitement. As a military commander he was admirable; a great general, a strict disciplinarian, yet always careful to attach his soldiers to himself, so that they cordially loved him. Guizot describes him as a 'man capable of great things, though he had no greatness of soul.' See Guizot's *Monk, Chute de la Republique*, Skinner's *Life of Monk*, Hallam's *Constitutional History*, and Macaulay's *History of England*.

MONKEY, n. *mŭng'kĭ* [Bret. *mounika*, a female ape: O.It. *monicchio*, a monkey—a dim. of O. It. *mona* or *monna*, a poor or old woman, a dame in ridicule, a monkey: a familiar corruption of It. *madonna*, my lady: Sp. *mono*, a monkey]: the animal that most resembles man, and is placed highest in the systematic scale; one of the quadrumana, especially a long-tailed one; a term of contempt or reproach for a mischievous person; an apparatus for disengaging and for securing in turns the ram of a pile-driving machine. MON'KEYISM, n. *-ĭzm*, the qualities of a monkey. MONKEY-BLOCK, a small single block strapped with a swivel. MONKEY-BREAD, the baobab-tree, the slightly acrid pulp of whose fruit is used as an article of food by the natives of Africa; the fruit of the *Adansōnĭă digĭtātă*, ord. *Sterculĭācĕæ*. MONKEY-JACKET, a short spencer or thick pea-jacket. MONKEY-POTS, the woody capsules of the *Lecythis ollārĭă*, a large Brazilian tree, ord. *Myrtācĕæ* (see LECYTHIDACEÆ). MONKEY-RAIL, a second and lighter rail raised about six inches above the quarter-rail of a ship. MONKEY-WRENCH, a wrench or spanner having a movable jaw. *Note.—Baboons* have short tails, *apes* have none.

MONK'EY (*Simia*): Linnæan genus of *Mammalia*, of the Linnæan order *Primates*, and of Cuvier's order *Quadrumana*, now constituting the family *Simiadæ*. The word M. was formerly of almost, if not altogether, the same signification with *Ape;* but the term *ape* is now more generally applied to those *Simiadæ* which have no tail, and no cheek-pouches; the name M. to those which have cheek-pouches and long tails, prehensile or not prehensile; while the name *Baboon* (q.v.) is applied to creatures considerably different from both. The smaller tailless *Simiadæ* are, however, still frequently spoken of as monkeys, and the term is also sometimes used to comprehend all the *Simiadæ*.

Of all animals, the *Simiadæ* show the greatest resemblance to man, both in general form and in anatomical structure. This is particularly the case with some of the larger apes. In none, however, is there a natural adaptation for the erect position so characteristic of man, which is assumed rarely, and in general only by captive individuals, as the result of training and constraint—all of the M. tribe preferring to walk on four feet rather than on two, but all being adapted for living chiefly among branches of trees, or—according to the habits of a comparatively small number of species—among bushy cliffs, where they make use of the four extremities for prehension, as hands. Most of them leap from branch to branch with wonderful agility, and some also swing themselves from a branch by their long prehensile tail, till they can seize hold of another branch. The thumb, in all the four extremities, is opposable to the fingers, which are long and flexible; but there are some monkeys which lack the thumb of the fore-limbs, or have it merely rudimentary, while the hind-limbs are always furnished with perfect hands. In attempting to walk erect, an ape

necessarily treads, not on the soles, but on the sides of its feet, which are turned inward, and the muscles of the legs do not enable it to maintain an erect position long or easily. This difficulty is increased by the way in which the head is affixed to the vertebral column, the *occipital foramen* being further back than in man, so that the weight of the head is thrown forward.—The face of a M. exhibits a grotesque resemblance to that of man; but the lower forehead, the less perfect nose, and the more projecting jaws, give it a brutal character. The dentition of monkeys is so similar to that of man, that the dental formula for very many is the same, though many others have an additional molar on each side of each jaw; but in many, the great size of the canine teeth is a marked brutal characteristic.—The digestive organs are generally very similar to those of man, but in some of the *Simiadæ*, more exclusively confined to vegetable food, there is a remarkable difference in a peculiar and very complicated structure of the stomach.—The food of monkeys consists chiefly of fruits, corn, and other vegetable substances; but most of them also catch and eat insects, and even birds, of the eggs of which they are very fond. In captivity, they learn to eat and drink almost everything that is used by man, and show a great fondness for sweet things, and for alcoholic liquors.—The skin of monkeys is generally covered in all parts with hair, but some have the face partially naked, and many have naked callosities on the buttocks.—Many have capacious cheek-pouches, in which they stow away food which they cannot consume with sufficient expedition. They are mostly gregarious, though there are some exceptions. Many of the species display strong attachment to their mates and to their offspring. One or two young are usually produced at a birth. They display remarkable propensity and talent for imitation; and this, with their extreme agility, their curious prying disposition, and their love of trick or mischief, makes them very amusing, whether in a wild or a captive state. Many of the stories told of monkeys evince much intelligence, though probably none of the species exceed in intelligence the dog or the elephant. Notwithstanding their resemblance to the human form, their imitative propensity, and their intelligence, none of the monkeys show the least capacity for imitating the human voice; and their 'chattering' is very unlike articulate speech.

The species of this family are very numerous, but all are confined to the warm parts of the world; Australia, however, and the South Sea Islands are destitute of them. They are divided into a number of genera, some of which belong exclusively to particular portions of the world. But in this respect, the most remarkable fact is the difference between those of the old world and those of America, the geographical distribution corresponding with the division of the family into two principal groups —the monkeys of the old world (*Catarrhini* of some naturalists), to which alone the name *Simiadæ* is some-

times restricted, having the nostrils separated only by a narrow septum, and the tail wanting, short, or long, but never prehensile; the monkeys of the new world (*Platyrrhini*), the family *Cebidæ* of some naturalists, having the nostrils widely separated, the tail always long, and often prehensile, most of them having also the four additional molar teeth above noticed, which none of the monkeys of the old world possess; but none of them having cheek-pouches, which many of the monkeys of the old world have.

MONMOUTH, *mŏn'mŭth:* maritime county in the w. of England, bounded s. by the estuary of the Severn, w. by Glamorgan; greatest length n. to s. about 35 m.; greatest breadth about 28 m.; about 572 sq.m., or 368,399 acres. The chief rivers are the Usk, the Wye on the e. border, and the Rumney on the w. border—all flowing s. into the estuary of the Severn. The coast-line, 22 m. in length, is indented only at the mouth of the Usk (which is navigable for vessels of the largest size to Newport), and at the mouth of the Wye, which vessels ascend to Chepstow. The surface is elevated in the n. and n.w. (the Sugar-loaf is 1,954 ft. high); but the coast districts, comprising the Wentloog and the Caldecot Levels, are low and rich, and are protected from the wash of the sea by sea-walls and earthworks. In the fertile valleys of the Usk and Wye, wheat is the principal crop; but in the less favored localities, barley and oats chiefly are grown. Coal, limestone, and ironstone abound in the mineral district in the n.w. of Monmouth. This district abounds in collieries and ironworks, and is a network of railways. Monmouth was a Welsh county until the reign of Henry VIII. The scenery is unusually beautiful; and in no part of England are to be found so many remains of feudal castles as in the eastern districts of this county: the chief remains are Raglan, Caldecot, and Chepstow castles; and Llanthony and Tintern abbeys. Roman antiquities are numerous. Pop. (1901) 230,800.

MONMOUTH: city, county-seat of Warren co., Ill.; on the Chicago, Burlington & Quincy and the Iowa Central railroads; about 95 m. n. by w. of Springfield. It is in an agricultural region, and nearby are coal fields and valuable clay deposits. It was settled in 1836, and in 1852 was incorporated. The present charter was granted in 1874. The chief manufactures are pottery, sewer pipe, stoneware, boxes, agricultural implements, stump-pullers, soap, flour and dairy products. The trade is principally in coal, grain, flour, poultry, dairy products, and live-stock. Monmouth College, founded in 1856 under the auspices of the United Presbyterian Church, is here, also the Warren County Library. The chief city officers are the mayor, who holds office two years, and the council. The waterworks are owned and operated by the municipality. Pop. (1900) 7,450; (1910) 9,128.

MONMOUTH.

MON'MOUTH: parliamentary and municipal borough and market-town of England, cap. of the county of M.; amid beautiful scenery, at the confluence of the Monnow and the Wye, 21 m. w.s.w. of Gloucester. Its church, dating from the 14th c., is surmounted by a lofty spire. Of its castle, favorite residence of John of Gaunt, and birthplace of Henry V., the ruins only remain. A building, said to be the study of Geoffrey of Monmouth, is all that remains of the Benedictine monastery. Railways connect the town with Newport on the w. and Ross on the e. Pop. (1881) 6,112; (1891) 5,470.

MON'MOUTH, BATTLE OF: contest in the revolution; at Freehold, Monmouth co., N. J., 1778, June 28, between the Americans under Washington and the British under Sir Henry Clinton. The latter having evacuated Philadelphia June 18, were on their way to Sandy Hook, with the Americans in pursuit. Clinton's main army was encamped on the high ground around Monmouth court house, in Freehold, when early on June 28, Gen. Lee attacked them with his advance guard of 4,000, while yet the main army was 3 m. away. Lee was at first successful, but afterward was completely routed, his men retreating in confusion until Gen. Washington met them, fiercely reprimanded Lee, and himself took command until the troops were reformed. Then Lee resumed command and held his position until ordered to retreat, which he did in good order. Meanwhile Washington had brought up the main body and taken an advantageous position on an eminence with a wood behind and a marsh in front of him: from this position he kept up an effective cannonade on the enemy. The latter made desperate efforts to dislodge the Americans: first attacking their left; then turning against their right under Gen. Greene, where, protected by an orchard, Gen. Wayne was keeping up a harassing and destructive fire. In this attempt Col. Monckton was killed while charging at the head of his royal grenadiers. His troops were repulsed with heavy loss, and Wayne held his position. Finally the British fell back to where Lee had met them in the morning. The Americans could not follow up their advantage, because of fatigue and the excessive heat. During the night Clinton made a hasty and silent retreat, and so escaped. The heat was so intense that many died during the day from its effects alone, the American troops especially being weakened by their terrible privations and suffering during the previous winter at Valley Forge. The loss of the Americans was 69 killed and 160 wounded. Of the British there were nearly 300 killed and 100 wounded and prisoners. After the battle Washington had Gen. Lee court-martialed on the ground of cowardice and suspended from his command for one year.

MON'MOUTH, James, Duke of: reputed natural son of Charles II.: 1649, Apr. 9—1685, July 15; b. Rotterdam. His mother, Lucy Walters, according to Evelyn, a 'browne, beautiful, bolde, but insipid creature,' came to England with her son 1656, during the Commonwealth. She is said to have been treated as though she had been the king's wife, and was committed to the Tower; but was soon allowed to retire to France, where she died. Charles sought out the boy, and committed him to the care of Lord Crofts, who gave him his own name. On the restoration, M., then 'Mr. James Crofts,' went to England with the queen-dowager, and was handsomely lodged at Hampton Court and Whitehall. These honors were, in after years, referred to by his followers as justifying their belief that he was indeed the king's legitimate son; though doubt has been cast on the statement that M. was even the king's natural son, in view of the fact that Lucy Walters had previously lived with Robert Sidney. The king however always claimed him and seemed fond of him. A wealthy heiress, Anne, daughter of the Earl of Buccleuch, was selected for his wife; and before he had completed his sixteenth year, he was married to her, and was created Duke of Monmouth. About the year 1670, Shaftesbury put M. forward as the head of the popular party, and rival of the Duke of York (afterward James II.). At the period of the Titus Oates' plot (1678), rumors that the 'Protestant Duke' was indeed the king's legitimate son spread far and wide. The Duke of York was compelled to quit the kingdom; and parliament brought forward a bill for excluding him from the succession, when Charles suddenly dissolved it. A document was at the same time issued by the king, solemnly declaring that he had never been married to Lucy Walters. M. was sent into Scotland, 1679, to quell the rebellion. He defeated the Covenanters at Bothwell Bridge; but his humanity to the fleeing and wounded was so conspicuous, and his recommendations to pardon the prisoners were so urgent, as to bring on him the violent censures of the king and Lauderdale. He thus became the favorite of the English nonconformists; though, according to Pepys, he had, years before, established a character for youthful vice and profligacy. He had indeed become noted for beauty of person and emptiness of mind. The return of the Duke of York, and the exile of M., soon followed. In Holland, he allied himself to the leaders of the nonconformist party, exiled like himself; and when he was allowed to return to London, he was received with such demonstrations of joy, that M. felt that he was the people's choice. In truth there was such widespread terror as to the accession to the throne of the king's Rom. Cath. brother, that M.'s possible claim was eagerly seized upon, and was even urged by Shaftesbury. In 1680, he made a semi-royal progress through the west of England, with the design, probably, of courting the nonconformists, who were more numerous there than in any other part of the country, except London and

Essex. In 1682, he traversed some of the n. counties. The king and his brother were alarmed; and M. was arrested at Stafford, and bound over to keep the peace. He meanly confessed his participation in the Rye-House plot, accusing himself and others of a design to seize the king's person, and subvert his government. The king pardoned him on his solemn promise to be a loyal subject to the Duke of York, in case the latter should survive the king. In 1684, M. fled to Antwerp, and remained abroad until the death of the king, when he resolved to embark for England. He landed 1685, June 11, at Lyme-Regis, and issued a manifesto declaring James to be a murderer and usurper, charging him with introducing popery and arbitrary power, and asserting his own legitimacy and right by blood to be king of England. He was received with great acclamations at Taunton, where he was proclaimed as James II. At Frome, he heard the news of the defeat of Argyle, who, at the head of the Scottish exiles, had attempted to raise an insurrection in Scotland. Money and men were now abundant; but arms were wanting, and thousands of those who had flocked to him went home for lack of them. July 5, he was persuaded, with only 2,500 foot and 600 horse, to attack the king's forces, which, under the command of the Earl of Faversham, were encamped at Sedgemoor, near Bridgewater. M.'s troops were unable to cross a running stream or wide ditch which protected the camp, and were mowed down by the king's artillery. Their ammunition soon failed; and M. having set a cowardly example of flight, his troops were slaughtered like sheep. About 300 of M.'s followers fell in the battle; but 1,000 were massacred in the pursuit. M. was found concealed in a ditch, and was brought to London. He made the most humiliating submissions, and obtained a personal interview with James. 'He clung,' says Macaulay, 'in agonies of supplications round the knees of the stern uncle he had wronged, and tasted a bitterness worse than that of death, the bitterness of knowing that he had humbled himself in vain.' Even his prayer for 'one day more,' that he might 'go out of the world as a Christian ought,' was brutally refused. June 15, he was brought to the scaffold, and beheaded on Tower Hill; the executioner performing his office so unskilfully that five blows were struck before the head was severed. M. met his death with calmness. The 'Bloody Assize' afterward commenced under Judge Jeffreys, when M.'s adherents paid a fearful penalty for their participation in his rash and ill-advised rebellion.

MONO-, *mŏn'ō-:* a prefix: see MON.

MONO, n. *mō'nō* [native name in Guatemala]: *Mycetes villosus*, the black howler, a black monkey with a voice which may be heard two miles off. The Indians eat its flesh. It is found in forests from East Guatemala to Paraguay.

MONOBASIC, a. *mŏn′ō-bā′zĭk* [Gr. *monos*, alone; *basis*, a base]: in *chem.*, requiring only one molecule of base to one of the acid to form a neutral salt, thus nitric acid is monobasic; in *bot.*, applied to a root reduced to a small unbranched portion, as though it formed merely the base of the stem.

MONOCARDIAN, a. *mŏn′ō-kâr′dĭ-ăn* [Gr. *monos*, alone; *kardiă*, the heart]: having a single heart, that is, one consisting of a single auricle and ventricle, as fishes: N. an animal having a single heart.

MONOCARPON, n. *mŏn′ō-kâr′pŏn* [Gr. *monos*, alone; *karpos*, fruit]: in *bot.*, a plant bearing fruit but once and then perishing; an annual plant. MON′OCAR′POUS, a. *-kâr′pŭs*, or MON′OCAR′PIC, a. *-kâr′pĭk*, bearing fruit but once and then perishing, as wheat, oats, etc. MON′OCAR′PIÆ, n. plu. *-pĭ-ē*, plants which bear fruit once and then perish.

MONOCEPHALOUS, a. *mŏn-ō-sĕf′a-lŭs* [Gr. *monokephalos*]: in *science*, having one head, but two distinct, or sometimes blended, bodies: in *bot.*, having a single head of flowers.

MONOCEROUS, a. *mŏ-nŏs′ėr-ŭs* [Gr. *monos*, alone; *keras*, a horn, a tusk]: having only one horn or tusk.

MONOCHLAMYDEOUS, a. *mŏn′ō-klăm-ĭd′ē-ŭs* [Gr. *monos*, alone; *chlamus* or *chlam′uda*, a military cloak, a scarf]: in *bot.*, having a single floral envelope or covering, which is the calyx.

MONOCHORD, n. *mŏn′ō-kawrd* [Gr. *monos*, alone; *chordē*, a gut or string]: musical instrument constructed to exhibit the mathematical proportions of musical intervals. It consists of a flat board four or eight ft. long, better 16 ft. where space can be spared. The breadth of the board is according to the number of the strings, from two to six. The board is covered with fine white paper. A straight line is drawn from end to end below each string, and each line is accurately divided into the different proportions into which the full length of the string, as a fundamental sound, harmonically divides itself: see HARMONICS. The string is fixed at one end, and rests on a bridge; while at the other end, where it also rests on a bridge, it is stretched by a tuning-peg, or by a weight. The sounds from the strings are produced by a violin-bow. The M. is used chiefly in illustrating acoustical experiments in the proportion of intervals and temperament.

MONOCHROME, n. *mŏn′ō-krōm* [Gr. *monos*, alone; *chroma*, color, complexion]: a painting in its tints, tones, and shades of only one color. MON′OCHROMAT′IC, a. *-măt′ĭk*, consisting of one color; exhibiting light only of one color.

MONOCLE, n. *mŏn′ō-kl* [F. single eye-glass; OF. *monocle*; L. *monoculus*, one-eyed]: animal with one eye; eye-glass for one eye.

MONOCLINATE, a. *mŏ-nŏk′lĭ-nāt* [Gr. *monos*, alone; *klinō*, I bend]: having one of the axes obliquely inclined; in *min.*, applied to certain crystals. MONOCLINOUS, a. *mŏ-nŏk′lĭ-nŭs*, in *bot.*, having both stamens and pistils in every flower. MONOCLINAL, a. *mŏn′ō-klī′năl*, in *geol.*, applied to strata that dip for an unknown length in one direction. MONOCLINIC, a. *mŏn′ō-klĭn′ĭk*, applied to a system of crystallization in which the crystals have three unequal axes, two of which intersect each other at an oblique angle, and are cut by the third at right angles; also called MONOCLINOHEDRIC, a. *mŏn′ō-klĭn-ō-hĕd′rĭk* [Gr. *hedra*, a seat].

MONOCOTYLEDON, n. *mŏn′ō-kŏt′ĭ-lē′dŏn* [Gr. *monos*, alone; *kotulēdon*, the hollow of a cup, cup-shaped]: a plant with only one cotyledon or seed-lobe, as in oats or wheat. MON′OCOT′YLE′DONOUS, a. *-lē′dŏ-nŭs*, having only one cotyledon or seed-lobe.

MONOCOTYLE′DONOUS PLANTS: plants in which the embryo has one and only one Cotyledon (q.v.). The cotyledon in these plants varies extremely in form, and is often comparatively of great size, but has always a slit, from which, as germination takes place, the gemmule sprouts. The gemmule in elongating assumes an acuminated shape. M. P. all are Endogenous (q.v.); except the Dictyogens (q.v.), in which the endogenous structure is not perfectly exhibited. They are also *endorhizal* [Gr. *endon*, within; *rhiza*, a root]; that is, the radicle is covered with a cellular sheath, and gives rise to fibrils similar to itself in structure. The leaves are generally sheathing at the base, and there embrace the stem; they also generally have simple parallel nerves connected by cross veins, the leaves of dictyogens alone being reticulated. The number of the parts of the flower is generally three, or a multiple of three. The floral envelopes, often splendid, as in lilies, tulips, etc.—are generally united as a Perianth (q.v.), instead of forming a distinct calyx and corolla. The principal natural orders of M. P. are Grasses, *Cyperaceæ*, Palms, Orchids, *Scitamineæ*, *Musaceæ*, *Liliaceæ*, and *Iridaceæ*. The general appearance of these plants distinguishes them almost as perfectly as any structural characters.

Of the fossil remains of the vegetable kingdom, the smallest portion consists of M. P., both acotyledonous and dicotyledonous plants being much more abundant.

MONOCRACY, n. *mŏn-ŏk′ră-sĭ* [Gr. *monos*, alone; *kratĕō*, I govern]: government by a single person. MON′OCRAT, n. *-krăt*, one who rules alone.

MONOCULAR, a. *mŏn-ŏk′ū-lėr*, or MONOC′ULOUS, a. *-lŭs* [Gr. *monos*, alone; L. *oc′ŭlus*, the eye]: one-eyed; suited for one eye, as an ordinary microscope. MONOCULE, n. *mŏn′ō-kūl*, a one-eyed insect.

MONOCYSTIC, a. *mŏn′ō-sĭs′tĭk* [Gr. *monos*, one; *kustis*, a bag, a bladder]: consisting of only one cell or cavity; unilocular.

MONOD, *mo-nod′*, Adolphe Frédéric Theodore: French Prot. clergyman: 1802, Jan. 21—1856, April 6; b. Copenhagen, whither his father, Jean M., pastor of the Reformed Church in Paris, had removed at the outbreak of the French Revolution. He was the second son (bro. of Frédéric M.) of an eminent family; was educated at the Coll. Bonaparte, Paris; studied theology at Geneva (to 1824); visited Italy and preached 1825–27 to a small Prot. congregation at Naples; returning to France was appointed pastor of the Reformed Church in Lyons, and made so strong an impression that, though himself removed on account of objection to his evangelical fervor and orthodox views of the person and mission of Christ, the church soon grew out of its small private meeting-place into a spacious chapel; and 30 years later, where he had begun alone, there were four evangelical pastors, many evangelists, and eight chapels. In 1838 he was appointed by the govt. prof. of theology at Montauban, and filled the office 11 years, travelling meanwhile in s. France, preaching and giving Bible instruction of great interest and power. In 1849 he succeeded his elder brother at the Oratoire in Paris, by appointment of the consistory and govt. confirmation. His eloquence, spiritual power, sympathetic and cultivated mind, refined character, and gift of imagination gave him remarkable success, both in the pulpit and in Bible instruction. He died suddenly, in Paris. Besides a volume of sermons, 1844, he published *Lucile, ou la Lecture de la Bible; La Femme;* and *Saint Paul.*

MONOD′, Frédéric Joel Jean Gerard: French Prot. clergyman: 1794, May 17—1863; b. Monnaz near Morges, Switzerland, eldest son of Jean M., and brother of Adolphe M. He was educated at Geneva, entered the ministry 1820, was pastor of the Oratoire in Paris more than 12 years, after his father's death; established 1824, and edited until his death, the *Archives du Christianisme;* united with Count de Gasparin, Edouard de Pressensé, and others in seeking to restore in the national (Prot.) church a rule of faith making rationalism inconsistent with membership; and not succeeding, took a leading part in organizing a Free Church of France based on belief in the divine mission and person of Christ. As preacher, lecturer, and Free Church leader his influence and reputation were very great. He visited America 1858, and was cordially received. His admiration of American institutions was extreme, and during the civil war he was one of the originators of an address signed by the majority of French ministers, earnestly deprecating the overthrow of the Union.—A son, Jean, became theol. prof. at Montauban 1865.

MONODACTYLOUS, n. *mŏn′ō-dăk′tĭl-ŭs* [Gr. *monos*, alone; *dak′tulos*, a finger or toe]: having only one finger or toe.

MONODELPHIA, n. plu. *mŏn′ō-dĕl′fĭ-ă* [Gr. *monos*, alone, single; *delphus*, a womb]: the division of mammals which have the uterus single, including all except the monotremes and marsupials. MONODELPHOUS, a. *mŏn′ō-dĕl′fŭs*, resembling the Monodelphia, as in bringing forth the young completely formed; in *bot.*, having all the filaments united so as to form a single bundle around the style.

MONODICHLAMYDEOUS, a. *mŏn-ŏd′ĭ-klăm-ĭd′ē-ŭs* [Gr. *monos*, one; *dis*, twice; *chlamus*, a cloak or tunic]: in *bot.*, having either one or both floral envelopes.

MONODON, n. *mŏn′ō-dŏn* [Gr. *monos*, alone; *odous* or *odonta*, a tooth]: the narwhal or sea-unicorn: see NARWHAL.

MONODY, n. *mŏn′ō-dĭ* [Gr. *monos*, alone; *ōdē*, a song]: a poem or song chanted or sung by a single person, and in which he is supposed to bewail himself; a lament; a dirge. MONODICAL, a. *mō-nŏd′ĭ-kăl*, pertaining to a monody. MON′ODIST, n. *-dĭst*, a writer of monodies.

MONŒCIA, n. *mŏn-ē′shĭ-ă* [Gr. *monos*, one; *oikos*, a house]: a class of plants having the stamens and pistils in distinct flowers on the same plant. MONŒ′CIAN, a. *-shĭ-ăn*. MONŒCIOUS, a. *-shĭ-ŭs*, in *bot.*, having the male and female parts of fructification (*stamens* and *pistils*) in different flowers, but upon the same plant. Such plants and their flowers are said to be *monœcious*. Monœcious plants form one of the classes of the Linnæan artificial system, but many occasional instances of monœcious species are found in genera belonging to other classes. Monœcious plants often have the flowers in catkins, sometimes the male flowers only; and often in spikes, the male flowers sometimes occupying the upper, sometimes the under part of the same spike with the female flowers, and sometimes distinct spikes upon the same plant. Common examples of monœcious plants are the hop, box, birch, beech, alder, oak, and hazel. MONŒCISM, n. *mŏ-nē′sĭzm*, the condition where unisexual flowers are produced on different branches.

MONOGAMIA, n. plu. *mŏn′ō-gā′mĭ-ă* [Gr. *monos*, one, single; *gamos*, marriage]: a general name for plants which have their anthers united but their flowers not compound. MONOGAM, n. *mŏn′ō-găm*, a plant having a simple flower though the anthers are united.

MONOGAMY, n. *mŏn-ŏg′ă-mĭ* [Gr. *monogamĭă*—from *monos*, alone; *gamos*, marriage, wedlock]: the marriage of one wife only; the condition or restraint of not marrying a second wife after the death of the first; the opposite of *polygamy*. MONOG′AMIST, n. *-ă-mĭst*, one who disallows second marriages. MONOG′AMOUS, a. *-ă-mŭs*, having one wife only, and not permitted to marry a second wife after the death of the first; as applied to animals, abiding by one female, as the dove.

MONOGASTRIC, a. *mŏn′ō-găs′trĭk* [Gr. *monos*, one; *gastēr*, the belly]: having only one stomach.

MONOGENESIS, n. *mŏn-ō-jĕn′ĕ-sĭs* [Gr. *monos*, alone, single; *genesis*, origin]: term used by Van Beneden to denote direct development of an embryo from a parent similar to itself. Prof. A. Thomson applies the term to the descent of an individual from one parent form, containing both the sperm cell and germ cell; monogony. Haeckel also uses it in this sense. MONOGENISM, n. *mŏnŏj′ĕn-ĭzm* [F. *monogénisme*]: system which assumes that all men are descended from a single pair. MONOG′ENIST, n. *-ĭst* [F. *monogéniste*]: supporter of monogenism. Huxley divides them into three classes: (1) 'Adamites' who accept the Mosaic account of the creation literally; (2) those who occupy a middle position between the 'Adamites' and the 'Rational Monogenists'; (3) 'Rational Monogenists,' including Linnæus, Buffon, Blumenbach, Cuvier, and Pritchard. Their views are that the present condition of the earth has existed for untold ages; that at an extremely remote period man was created somewhere between the Caucasus and the Hindu Koosh; that as men multiplied they migrated; and that climatic influences and other conditions are sufficient to account for all the diversities of mankind. MONOG′ENY, n. *-ĭ*, tenet that mankind sprang from a single pair. See ETHNOLOGY.

MONOGRAM, n. *mŏn′ō-grăm* [Gr. *monos*, alone; *gramma*, a letter]: a cipher, or a single device, formed by the intertexture of two or more letters; the private mark of an artist. MON′OGRAM′MAL, a. *-măl*, or MON′OGRAM′MIC, a. *-mĭk*, resembling or pertaining to a monogram.

MON′OGRAM: a character or single device composed of two or more letters of the alphabet, often interlaced with other lines, and used as a cipher or abbreviation of a name. A perfect M. is one in which all the letters of the word are to be traced. The use of monograms began at a very early date. They are found on Greek coins, medals, and seals, and are particularly numerous on the coins of Macedonia and Sicily. Both on coins and in MSS., it was the practice to represent the names of states and cities by monograms, of which more than 500 are known, but some have not been deciphered. Monograms occur on the family coins of Rome, but not on the coins of the earlier Roman emperors. Constantine placed on his coins one of the earliest of Christian monograms, which is to be traced in the recesses of the catacombs, composed of the first and second letters of the Greek ΧΡιστος (Christus), a M. which also appeared on the Labarum (q.v.), and was continued on the coins of the succeeding emperors of the East to Alexander Comnenus and Theodorus Lascaris. We often find it combined with the first and last letters of the Greek alphabet (Rev. i. 8), as in Fig. 1. Another well-known M. is that of the name of Jesus, IHS, from the first three letters of the Greek ΙΗΣοῦς (Iesous).

Popes, emperors, and kings of France during the middle ages were in the practice of using a M. instead of

signing their names. Almost all the coins of the French kings of the Carlovingian race bear their respective monograms, as also do those of Alfred and some other Saxon

Fig. 1.

kings of England. Fig. 2. represents that of Charlemagne, a perfect M., in which all the letters of *Karolus* can be traced.

Painters and engravers in Germany and Italy have used monograms to a large extent as a means of distinguishing their works. In these, the initial letters of their names were often interwoven with figures of a symbolical character, to form a rebus on the artist's name. Fig. 3 is the M. of Albert Dürer; Fig. 4, of Ludger zum Ring. The first typographers distinguished their publications by wood-cut vignettes, whose invention is ascribed to the elder Aldus; but besides these, each made use of a M. or cipher, a series of which, well known to the bibliographer, fixes the identity of the ancient editions, German, Italian, and English, from the inven-

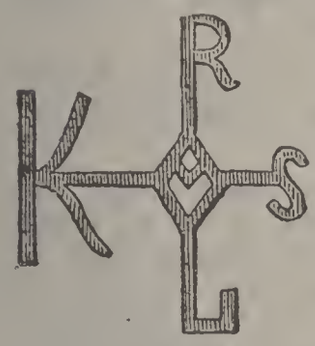


Fig. 2.

Fig. 3.

Fig. 4.

Fig. 5.

Fig. 6.

tion of printing till the middle or end of the 16th c. Fig. 5 is the M. of Andrea Turresano d'Asola, father-in-law of Aldus Manutius; Fig. 6, of Luca Antonio Giunta, famous printer of Venice between 1489 and 1500; Fig. 7, of William Caxton. For a detailed account of the monograms of early printers and others, see Brulliot, *Dictionnaire des Monogrammes* (Munich 1832–34); Horne's *Introduction to Bibliography*, II.; and Herbert and Ames's *Typographical Antiquities*.

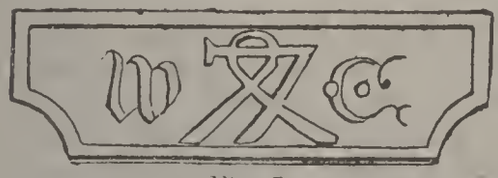


Fig. 7.

MONOGRAPH, n. *mŏn'ō-grăf* [Gr. *monos,* alone; *graphō,* I write]: treatise or description limited to a single thing or object, or to a single branch of a subject. MONOGRAPHER, n. *mŏn-ŏg'ră-fẽr,* or MONOG'RAPHIST, n. *-fĭst,* a writer of monographs. MON'OGRAPH'IC, a. *-grăf'ĭk,* or MON'OGRAPH'ICAL, a. *-grăf'ĭ-kăl,* of or pertaining to a monograph. MON'OGRAPH'ICALLY, ad. *-lĭ.* MONOGRAPHY, n. *mŏn-ŏg'ră-fĭ,* the art or practice of writing monographs; description or representation simply by lines without colors.

MONOGYNIA, n. *mŏn'ŏ-jĭn'ĭ-ă* [Gr. *monos,* alone; *gŭnē,* a female, a woman]: an order of plants, including such as have only one pistil or stigma in a flower. MONOGYN, n. *mŏn'ō-jĭn,* a plant having only one pistil. MON'OGYN'IAN, a. *-jĭn'ĭ-ăn,* or MONOGYNOUS, a. *mŏn-ŏj'ĭ-nŭs,* having only one pistil or stigma in a flower; also applied to plants having one style. MONOGYNŒCIAL, a. *mŏn'ŏ-jĭn-ē'shĭ-ăl* [Gr. *oikĭă,* a house]: in *bot.,* applied to simple fruits formed by the pistil of one flower.

MONOHEMEROUS, a. *mŏn-ō-hĕm'ẽr-ŭs* [Gr. *monos,* alone, single; *hēmera,* a day]: in *med.,* existing or continuing for a single day.

MONOIDEISM, *mō'nō-ĭd'ē-ism* [Gr. *monos,* alone, and *idea,* idea]: a term applied to a mental state in which the mind is firmly occupied by one idea. Every state of attention is in a measure such a condition, but in abnormal states the concentration which ordinarily is transitory becomes relatively permanent, leading to a form of 'fixed idea.'

MONOLITH, n. *mŏn'ō-lĭth* [Gr. *monos,* alone; *lithos,* a stone]: pillar, column, monument, obelisk, statue, or other structure, consisting of a single stone. MON'OLITH'IC, a. *-lĭth'ĭk,* or MON'OLITH'AL, a. *-ăl,* consisting of a single stone.

MONOLOGUE, n. *mŏn'ō-lŏg* [F. *monologue,* one that loves to hear himself talk—from Gr. *monologos,* speaking alone—from *monos,* alone; *logos,* speech]: a speech or poem uttered by a person alone; a soliloquy. MONOLOGIST, n. *mŏn-ŏl'ŏ-jĭst,* a writer or performer of monologues. MONOL'OGY, n. *-jĭ,* the habit of soliloquizing, or of monopolizing conversation.

MONOMANIA, n. *mŏn'ō-mā'nĭ-ă* [Gr. *monos,* alone; *manĭă,* madness]: a mental disease in which madness exists on one particular subject, or a limited number of subjects, while the mind is measurably lucid on others. MON'OMA'NIAC, n. *-nĭ-ăk,* one affected with monomania: ADJ. affected with monomania. MON'OMANI'ACAL, a. *-mā-nī'ă-kăl,* having the character of monomania, or affected with it.—SYN. of 'monomania': madness; mania; insanity; derangement; alienation; aberration.

MONOMANIA: partial insanity, in distinction from more general mental disturbances, such as imbecility,

dementia, mania. A single group of ideas or a single function of the mind becomes abnormal, while the rest of the mind, at least in the early stages of the disturbance, is very little affected. The term was introduced by Esquirol; but is now not regarded as describing a particular disease. It is rather a condition of partial abnormality which may occur in several different diseases, in paranoia, in maniacal-depressive insanity, in constitutional neurasthenia, etc. In paranoia the systematized delusions continue to be the most prominent symptoms throughout the course of the disease. They may take the form of some delusion of persecution or of grandeur. The patient may continue to conduct his business for some years with comparatively little disturbance outside his particular delusion. Historically, monomanias have sometimes been distinguished on the basis of their social effects, as kleptomania, a mania to steal; pyromania, a mania to burn; dipsomania, a mania to drink; etc.

MONOME, n. *mŏn'ŏm,* or MONOMIAL, n. *mŏn-ō'mĭ-ăl* [Gr. *monos,* alone; *onoma,* a name]: in *alg.,* a quantity or expression of one term only, as $2ab$.

MONOMETALLISM, a. *mŏn-ō-mĕt'al-ĭzm* [prefix *mono-;* Eng. *metal; -ism*]: the fact or principle of having only one metal (e.g., gold) as a standard for coinage; belief in the advantages of a single metallic standard. See BIMETALLISM; MONEY; etc. MONOMETAL'LIST, n. *-ĭst,* one who advocates monometallism.

MONOMETER, n. *mŏn-ŏm'ĕ-tėr* [Gr. *monos,* alone; *metron,* a measure]: a rhythmical series consisting of a single metre. MON'OMET'RIC, a. *-rĭk,* having the axes equal or similar, said of certain systems of crystallization.

MONOMORPHOUS, a. *mŏn'ō-mŏr-fŭs* [Gr. *monos,* alone; *morphē,* form]: having but a single form—said of insects which, in their larval state, are nearly the same as in the perfect condition, except as regards wings.

MONOMYARIA, n. plu. *mŏn'ō-mī-ā'rĭ-ă,* or MON'OMY'ARIES, n. plu. *-mī'ă-rĭz* [Gr. *monos,* single; *mus,* a muscle]: a term employed to distinguish those bivalves whose shells are closed by a single adductor muscle, such as the oysters and clam-shells. MON'OMY'ARY, n. *-mī'ă-rĭ,* a bivalve of the order *Monomyaria:* ADJ. having but one muscle for closing the shell.

MONONGAHELA, *mō-nŏn-ga-hē'la,* RIVER: stream rising in the Alleghany Mountains in Virginia, flowing n. into Pennsylvania, and uniting with the Alleghany at Pittsburg to form the Ohio; length 300 m.

MONONGAHELA, BATTLE OF THE: the name given to one of the battles of the war between France and England (known as the French and Indian war) for the possession of the territory adjacent to the Great Lakes and the Ohio river basin. Gen. Edward Braddock (q.v.) on Sep. 24, 1754, had been appointed commander of the

English forces in America and determined to reduce Fort Duquesne (Pittsburg), that being an important French post. He was short of money, supplies and regular troops and the colonists were slow to aid him in collecting them. He tried to secure a large body of Indians for scouts and allies, but only obtained 40 or 50. He let all but eight of them go through bad judgment, and disgusted those so greatly by his manners that one of them deserted, and the rest warned their friends against coming near. Transportation facilities were also meagre and the route tedious and difficult, but finally the expedition started from Fort Cumberland (now Cumberland, Md.) the first week in June, 1755, with 2,150 men. The march was most toilsome and slow, involving cutting roads, bridging streams, making causeways, passing through swamps, etc.; and on the 18th, at Little Meadows, 1,200 picked men were chosen to continue the expedition, the rest being left behind under Dunbar. On the night of July 4 he halted two days about 25 m. from his destination, to wait the reports of his Indian scouts and convoy of provisions from Dunbar's camp—to his destruction but not to his blame. Reaching Turtle (now Rush) creek the road suddenly ended at a precipice impassable for artillery and wagons, and he decided to quit the ridge, where ambuscade was impossible, and make a double fording across an elbow of the Monongahela. Meantime the French commander, Contrecœur, had decided to withdraw without a blow, but a Captain Beaujeu asked leave to take a detachment and resist the passage of the second ford, 8 m. off. He was given about 200 white troops, and by a brilliant appeal on the morning of the 9th to the Indians, who at first hung back, obtained several hundred of them also. When he came in sight of the English, they had already crossed, and advanced so that both flanks would be exposed for some 200 yards to an enemy who occupied the deep ravines, thick with tangled forest growth and vines, that seamed the river bluff. Braddock's ruinous error was in not beating up ahead on his flanks, as Col. Sir Peter Halket urgently besought him to do the night before; thereby he marched straight into the worst of ambushes. Into these the Indians glided, while the white troops barred the English path in front; and the head of the advancing column went down under a storm of lead. Shaken for a moment, the vanguard moved against the concentric ring; and after another terrible discharge, returned it with a volley that swept away every enemy in sight, and struck Beaujeu and a dozen others dead. The Indians turned to fly; rallied by the other French officers, they returned to cover, and under their unerring fire the English advance broke and retreated; mixing with the rear in the narrow path, both became mingled in a mob which Braddock could not restore to order. Huddled into a 12-foot road, shut in by a forest alive with yells and filled with an invisible foe, they lost all sense or percep-

tion, and twice shot down bodies of their own men who had gained slight vantage points, taking their smoke for the enemy's. Fifty Virginians were thus slain at a blow. The regulars refused to charge, though Braddock, with four horses successively shot under him, and the other officers strove to hearten them to invade the wood; the provincials sought to fight Indian fashion behind trees and logs, but Braddock with furious threats and blows drove them back into rank again, where they fell in scores. Washington and Halket begged to have them allowed to leave the ranks, but Braddock still refused. The ammunition began to fail; the baggage was attacked; all Braddock's aides but Washington were shot down; three-fourths of the officers, and three-fifths of the entire army; and only then would the ill-judging but heroic Braddock give the signal for retreat. Shortly afterward Braddock received a ball through the lungs; not one of the English soldiery would stay to carry him off the field, but one English and two American officers took him from the field to a spot half a mile across the river. Here the dying hero tried to establish a camp for a rallying place, and to care for the wounded and wait for Washington's return from Dunbar; but although the French and Indians had not followed them across, the 100 English soldiers he had induced to stop there stole away again and fled. The officers with their commander marched on till 10 P.M. on the 10th, when they halted and met the convoy from Dunbar; on the 11th he reached Dunbar's camp, where the news of the rout had set his soldiers also deserting and fleeing in wild panic. Giving up all hope of the expedition in any hands now, the remnant of the army proceeded toward Great Meadows, where Braddock expired, leaving his favorite horse and body servant to Washington. Of 1,460 men in the battle, 456 were killed and 421 wounded; 63 out of 89 commissioned officers were killed or injured, and every field officer. The enemy's casualties were about 60.

MONONGAHELA CITY: city in Washington co., Pa.; on the Monongahela river, and on the Pennsylvania and the Pittsburg & Lake Erie railroads; about 32 m. s. of Pittsburg. It is in a coal region, in which the chief industries are coal mining and manufacturing. It was settled in 1792 by Joseph Parkison, was incorporated as a borough 1833, Apr. 3, and chartered as a city 1873, Mar. 24. The chief manufactures are glass, foundry and machine-shop products, flour, lumber and paper. It has considerable trade in the home manufactures, and in coal and farm products. The principal buildings are 11 churches, 5 public schools, an academy, and a Memorial Hospital. The 4 banks contain a combined capital of $2,500,000. The government is administered by a mayor and a council of 12 members, all of whom are elected annually. Pop. (1900) 5,173; (1910) 7,598.

MONOPATHY, n. *mŏn-ŏp'ă-thĭ* [Gr. *monos,* alone; *pathos,* suffering]; solitary suffering or sensibility.

MONOPETALOUS, a. *mŏn′o-pĕt′a-lŭs* [Gr. *monos*, alone; *pet′alon*, a leaf]: having the corolla in one piece, formed by the union of several petals, cohering so as to form a tube; gamopetalous.

MONOPHONIC, a. *mŏn-ō-fŏn′ĭk* [Gr. *monos*, alone, single; *phōnē*, sound]: in *mus.*, a term applied to a composition having but one part; single-voiced.

MONOPHTHONG, n. *mŏn′ŏf-thŏng* [Gr. *monos*, alone; *phthonggos*, a sound]: a simple vowel-sound; two vowels pronounced as one. MON′OPHTHON′GAL, a. consisting of a simple vowel-sound.

MONOPHYLETIC, a. *mŏn-ō-fī-lĕt′ĭk* [Gr. *monos*, alone, single; *phulē*, a tribe, a family]: of or pertaining to a single family. MONOPHYLET′IC HYPOTH′ESIS, n. the hypothesis of descent which endeavors to trace the origin of all individual groups of organisms to a single common species of Moneron, which originated by spontaneous generation; opposed to Polyphyletic.

MONOPHYLLOUS, a. *mŏn-ŏf′ĭl-lŭs* or *mŏn′ŏ-fĭl′lŭs* [Gr. *monos*, alone; *phullon*, a leaf or blade]: one-leaved; in *bot.*, monosepalous; having an involucre composed of a single piece.

MONOPHYODONT, n. *mŏn′ŏ-fī′ō-dŏnt* [Gr. *monos*, single; *phŭō*, I generate; *odontes*, teeth]: a mammal which has only one set of teeth.

MONOPHYSITE, n. *mŏn-ŏf′ĭ-sīt* [Gr. *monos*, alone; *phusis*, nature]: one who maintains that Christ had one nature only, the human and divine united in one. The Monophysites were a widely ramified sect of the ancient church who held that Christ has only *one* nature, the human nature absorbed into the divine. Monophysite views were first decidedly put forward in the controversy against Nestorius. Cyril having expressed the opinion that the flesh of the Logos was essential to his personality, the archimandrite Eutyches (q.v.) went on to assert a deification or apotheosis of the flesh of Christ, and obtained the consent of a synod at Ephesus, 449, commonly called the 'Synod of Robbers,' to this doctrine (see EPHESUS, COUNCILS OF); but he and his adherents (at first called after him EUTYCHIANS) were condemned as heretics by the Council of Chalcedon (q.v.) two years later. It was after this council that the name *Monophysites* began to be used. The decision of the council, however—viz., that in Christ *two* natures, neither interfused, changed, nor divided, were united in *one* person, and constituted *one* hypostasis—was not adapted to allay, but rather to increase discord. Accordingly, the strife grew hotter. The Asiatic and Egyptian clergy, strongly opposed to Nestorianism, were generally inclined to Monophysite views, and received countenance from Emperor Basiliscus. After long and often bloody contests between the supporters of the opposite opinions, the Monophysites formally separated from the orthodox church. This separation took place in the first half of the 6th c.,

when the imperial protection hitherto bestowed on them was lost by the alliance of the emperors Justin and Justinian with the Latin Church. Besides, they had not maintained unity among themselves. As early as 482, when Emperor Zeno published his famous *Henoticon*, or formula of concord, it was accepted by several of the more moderate Monophysites. This roused the indignation of the extremer sectaries; they renounced fellowship with their laxer brethren, and formed a sect of their own. They were called *Akephaloi*, and formed the *ultras* among the Monophysites. Controversies arose also in 519 on the question, whether or not the body of Christ was corruptible. The Severians—adherents of Severus, deposed bishop of Antioch—affirmed that it was; the Julianists, or Gajanites, followers of Bp. Julianus or Gajanus, denied it. The former were consequently called (Gr.) *Phthartolatrists*, (Lat.) *Corrupticolæ* (Worshippers of the corrupt); the latter, *Aphthartodocetæ* (Believers or Teachers of Incorruption), and sometimes—as an incorruptible body could be only apparent, and not real—*Phantasiasts*. The *Aphthartodocetæ* split again on this other point—whether or not Christ's body was created; the *Aktistetoi* (Gr. *ktizō*, to create) asserting that it was not created, and the *Ktistolatrists*, that it *was*. The Severians, called also, after one of their bishops, *Theodosians*, finally got the upper hand, and excommunicated their opponents, including another sect, the *Agnoetoi*, who denied that Christ as a man was omniscient. About 560, the Monophysite Askusnages, and after him the Christian philosopher Philoponus, ventured to speak of the Three Persons in the Godhead as Three Gods. This, however, was reckoned heretical even by the Monophysites themselves, and was the occasion of a large recession to the bosom of the Catholic Church. Monophysite communities continued strongest in Egypt, Syria, and Mesopotamia, where they maintained a regular ecclesiastical order under their own patriarchs of Alexandria and Antioch; and after the Syrian, Jakob Baradæus (Al-Baradai, died about 578), had drawn up for them an ecclesiastical constitution, they formed the independent churches of the *Jacobites* and *Armenians*. See JACOBITE CHURCH: ARMENIAN CHURCH: EUTYCHES. The Coptic and Abyssinian churches also are Monophysite in doctrine.

MONOPLAST, n. *mŏn′ō-plăst* [Gr. *monos*, one; *plastos*, formed]: a naked non-vesicular body; an animal cell destitute of envelope. MONOPLASTIC, a. *mŏn′ō-plăs′tĭk*, having one primary form.

MONOPODIA, n. *mŏn′ō-pō′dĭ-ă* [Gr. *monos*, one; *pous* or *poda*, a foot]: a monstrosity having one foot only. MON′OPO′DIUM, n. *-pō′dĭ-ŭm*, in *bot.*, an elongated axis giving off lateral structures having a similar nature. MON′OPO′DIAL, a. *-pō′dĭ-ăl*, applied to an indefinite or centripetal inflorescence; racemose.

MONOPOLI, *mō-nŏp′o-lē:* town of s. Italy, province of Bari, on the Adriatic coast, in a pleasant and healthful plain, 28 m. e.s.e. of Bari. It is supposed to be of Grecian origin, the name in Greek signifying the *solitary city.* It is surrounded by walls, and has a fortress constructed 1552 by Charles V. The neighboring territory yields an immense quantity of olive-oil. Pop. of M. abt. 14,000.

MONOPOLIZE, v. *mŏ-nŏp′ō-līz* [F. *monopoliser;* Sp. *monopolizar,* to monopolize—from L. *monopōlĭŭm;* Gr. *monopōlĭŏn,* the right of monopoly—from Gr. *monos,* alone; *pōlĕō,* I sell]: to get the exclusive right of selling; to purchase or obtain possession of the whole of anything with the view of selling at an advanced price and controlling the market; to obtain or engross the whole. MONOP′OLIZING, imp.: ADJ. obtaining the sole power or right; engrossing. MONOP′OLIZED, pp. *-līzd.* MONOP′OLIZER, n. *-lī-zėr,* or MONOP′OLIST, n. *-lĭst,* one who has obtained the exclusive power to trade in a certain article, or who, by buying up the whole of it, has the command of the market at some place. MONOPOLY, n. *mŏ-nŏp′ō-lĭ,* the possession of exclusive dealing in the sale of an article, which may be held by right of purchase, by patent, or simply by means of its superior manufacture; formerly a grant from the crown of the right of exclusive trading in some article.

MONOP′OLY: limitation to one or more persons of the right or power to conduct business as a trader. It is generally used in a bad sense to express something injurious, but economic science has lately very much narrowed the field over which its injurious character is supposed to extend. In the first place, to be injurious it must be created by force or in some unnatural way; if it come in the natural course of trade, it is generally beneficial. Thus, to a village where three or four traders have conducted a small lazy business, drawing large profits, there comes a capitalist, who sets up a large concern on the ready-money system, and, by selling good articles at a low rate, absorbs all the business. He is of course abused as a monopolist by the ineffective persons whom he has superseded; but his presence is a benefit to the community generally. If, however, he had gone to the village, not to compete with others, but with a government patent in his pocket securing to him the exclusive trade of the village, then, as he could sell at his own price, and make a fortune without trouble, he would of course be, like the old royal monopolists, a calamity to the people.

A careful distinction must be preserved between monopoly and property—that is to say, an exclusive right to *trade* must be separated from an exclusive right to *possess*—for, while the law of property exists, possession will always be exclusive. If, then, a particular trade can be conducted only with large capital, it must fall to those who either singly, or by co-operation, can com-

mand that capital; and the answer to all complaints on the part of others is, that since capitalists can best serve the public in that particular, it is best for the public that capitalists should be allowed to do so.

A deal of legislation was wasted by our ancestors in Britain in enactments to prohibit people from creating monopolies by that fair competition which is now considered the true healthful development of trade. For some account of them and of their repeal, see ENGROSSING. When British trade was increasing in the 16th c., it found some old powers alleged to be inherent in the royal prerogative for conferring exclusive trading rights, which led to much oppression and loss. In Queen Elizabeth's parliament of 1597, a complaint was made that, for the benefit of favored courtiers, oppressive monopolies had been granted, not only for the sale of foreign luxuries, but for salt, leather, coal, and other articles of ordinary consumption. Queen Elizabeth said she 'hoped her dutiful and loving subjects would not take away her prerogative, which is the choicest flower in her garden, and the principal and head pearl in her crown and diadem.' Parliament returned to the charge, however, 1601, when, on the reading over of the list of monopolies, a theatrical scene was introduced by a member calling out: 'Is not bread among the number?' and on this producing a sensation, continuing: 'Nay, if no remedy is found, bread will be there before the next parliament.' In 1621, parliament took proceedings against Sir Giles Mompesson, charged with an oppressive use of his patent's monopoly. Four years afterward, an act was passed limiting this power in the crown. It leaves the right to grant only a limited monopoly in the manufacture of his invention to any inventor, and this is the origin of the present patent law: see PATENT.

MONOPTERAL, a. *mŏn′op′tėr-ăl*, or MONEPTERAL [Gr. *monos*, alone; *pteron*, a wing]: one-winged; used to designate a temple without a cella, composed of columns arranged in an open circle and supporting a cupola or a conical roof.

MONOPTOTE, n. *mŏn′op-tōt* [Gr. *monos*, alone; *ptōtos*, fallen, or apt to fall]: in *gram.*, a noun having but one oblique case-ending.

MONORGANIC, a. *mŏn′ŏr-găn′ĭk* [Gr. *monos*, alone; *or′gănon*, an organ]: in *med.*, belonging to or affecting one organ, or a set of organs.

MONOSEPALOUS, a. *mŏn′ō-sĕp′ă-lŭs* [Gr. *monos*, alone; *sepălon*, a sepal]: having the sepals which compose a calyx united at their edges or margins so as to form a tube; gamosepalous.

MONOSIS, n. *mŏ-nō′sĭs* [Gr. *monos*, one, single]: in *bot.*, the isolation of an organ from the rest.

MONOSPERMOUS, a. *mŏn′ō-spėr′mŭs*, or MONOSPER′MAL, a. *-măl* [Gr. *monos*, alone; *sperma*, seed]: one-seeded; applied to a fruit having only one seed. MON′OSPERM, n. *-spėrm*, a plant of one seed only.

MONOSPHERICAL, a. *mŏn′ō-sfĕr′ĭ-kăl* [Gr. *monos*, alone; *sphaira*, a sphere or globe]: consisting of one sphere or globe.

MONOSTACHOUS, a. *mŏn-ŏs′tă-kŭs* [Gr. *monos*, one; *stachus*, an ear or spike of corn]: in *bot.*, disposed or arranged in one spike only.

MONOSTICH, n. *mŏn′ō-stĭk* [Gr. *monos*, alone; *stichos*, a verse]: a poem complete in one verse.

MONOSTOMUM, n. *mŏn-ŏs′tō-mŭm*, MONOS′TOMA, n. plu. *-tō-mă* [Gr. *monos*, one; *stoma*, a mouth]: genus of trematoid worms, so called from having only a single sucker, which is situated anteriorly, and surrounds the mouth. It belongs to the *Trematoda Digenea* (of Van Beneden), all of which present the phenomena of alternation of generations, the earlier or larval forms occurring chiefly in mollusks, while the perfect worms are found, mostly, in vertebrated animals. Among the species of this genus occur *M. flavum*, found in waterfowl (the larva being the *Cercaria ephemera*, which is common in *Planorbis*, etc.), *M. mutabile*, found in various birds, and *M. lentis*. The last-named species derives its specific name from its having been found by Von Nordmann in a lens extracted in a case of cataract. Cobbold and other distinguished helminthologists are inclined to believe that this is not an independent species, but identical with the *Distoma ophthalmiobium* of Diesing.

MONOSTROPHIC, a. *mŏn′ō-strof′ĭk* [Gr. *monos*, alone; *strophē*, a turning]: not varied in measure; having one strophe only.

MONOSYLLABLE, n. *mŏn′ō-sĭl′lă-bl* [L. *monŏsyllăbus*, of one syllable—from Gr. *monos*, alone; *sullăbē*, a syllable]: a word of one syllable. MON′OSYLLAB′IC, a. *-lăb′ĭk*, consisting of words of one syllable.

MONOTESSARON, n. *mŏn-ō-tĕs′sa-rŏn* [Gr. *monos*, alone, single; *tessares*, four]: a harmony of the four gospels; a single narrative compiled from a collection of the four gospels.

MONOTHALMIC, a. *mŏn′ō-thăl′mĭk* [Gr. *monos*, single; *thalămos*, a chamber]: in *bot.*, applied to fruits formed from one pistil. MON′OTHAL′AMOUS, a. *-thăl′ă-mŭs*, one-chambered—applied to shells.

MONOTHECAL, a. *mŏn′ō-thē′kăl* [Gr. *monos*, single; *thēkē*, a sheath]: in *bot.*, having a single loculament.

MONOTHEISM, n. *mŏn′ō-thē-ĭzm* [Gr. *monos*, alone; *Theos*, God]: doctrine of, or belief in, the numerical unity (*unus numero*) of the Godhead; or belief in and worship of only one living God. It is thus the opposite of *Polytheism* (q.v.). See GOD. The ‘doctrine of the Trinity,’ being thought by some to be incompatible with the monotheism taught by Jesus Christ, is therefore rejected by them as no part of his teaching: see UNITARIANS. While some theological statements of the Divine Triunity have not been sufficiently guarded on this point,

it is yet plain that a real belief in a Tri-unity in God (whether it be true or not) can be held with no approach to tritheism or to polytheism. Mohammedans and Jews hold the doctrine of the 'unity of God,' even more rigorously in some respects than modern Christians, at least they reject with vehemence the least approach to a Trinitarian conception of the Deity: see TRINITY. The majority of mankind are polytheists. MON'OTHEIST, n. *-thē-ĭst*, one who believes that there is but one God. MON'OTHEIS'TIC, a. *-ĭs'tĭk*, pertaining to monotheism.

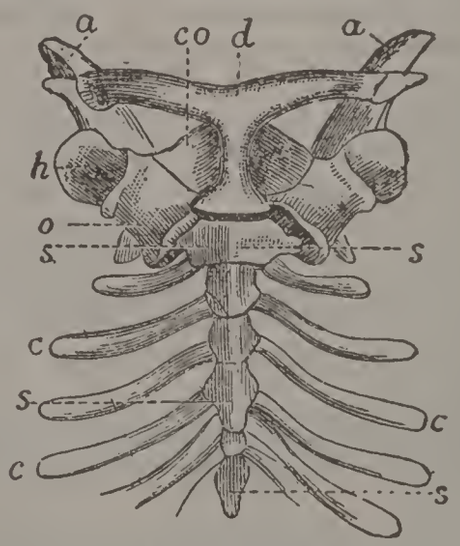
MONOTHELITES, n. plu. *mŏn-ŏth'ē-līts* [Gr. *monos*, single; *thĕlō*, I wish, I will]: a heretical sect of the 7th century who taught that Christ had two natures but only one will, the human will being absorbed in the divine. MONOTH'ELITE, a. holding the doctrine that the human will of Christ was absorbed in the divine. MONOTH'ELISM, n. *-ĕl-ĭzm*, a modification of Eutychianism, introduced after the condemnation of that doctrine by the Council of Chalcedon, and which consisted in maintaining that, though Christ had two natures, the human and the divine, yet these natures possessed or acted by but a single will, the human will being merged in the divine, or absorbed by it. The author, at least the most active propagandist of this doctrine, was Sergius, Patriarch of Constantinople, who obtained for it the support of Emperoror Heraclius; and its progress was materially forwarded by the silence which, at the instance of Sergius, and under his representations, the pope, Honorius (q.v.), was induced to maintain regarding the question. The doctrine was formally condemned in the sixth general council at Constantinople 680, with which condemnation it is commonly said that the early controversies on the incarnation were ended. The declaration of that council was that there are in Christ two natural wills and two natural operations thereof, without division, conversion, or change, with nothing like antagonism or confusion of the two; but that at the same time the human will in Christ could not come into collision with his divine will, but is in all things subject to it. See EUTYCHES: MONOPHYSITES.

MONOTOMOUS, a. *mŏ-nŏt'ō-mŭs* [Gr. *monos*, alone; *tŏmē*, a cutting]: in *min.*, having its cleavage distinct in one direction only.

MONOTONE, n. *mŏn'ō-tōn* [Gr. *monos*, alone; *tonos*, a sound]: a succession of sounds having the same pitch; an unvaried tone of voice. MONOTONOUS, a. *mŏ-nŏt'ō-nŭs* [Gr. *monot'ŏnos*, of the same tone]: having a continued sameness of sound; continued with dull uniformity. MONOT'ONOUSLY, ad. *-lĭ*. MONOTONY, n. *mŏ-nŏt'ō-nĭ*, dull uniformity of tone or sound in speaking, reading, or singing; sameness; a want of variety.

MONOTREMATOUS, a. *mŏn'ō-trĕm'ā-tŭs* [Gr. *monos*, single; *trema*, a hole or opening]: applied to the lowest mammals, viz., the Ornithorhynchus and the Echidna, which resemble birds in having a cloaca only, or one external outlet for excrements and genital products. MONOTREME, n. *mŏn'ō-trēm*, one of the MON'OTREM'ATA, *-trĕm'-ă-tă*, or monotrematous animals. MONOTREMATA, lowest order of mammalia, many of whose characteristic points indicate an approximation to birds. The skull is smooth; the brain-case very small as compared to the face; the snout much prolonged, and the jaws unprovided with soft movable lips, and not furnished with teeth. (In the ornithorhynchus, there are two horny plates in each half-jaw, which act as teeth, while in the echidna even these substitutes for teeth are wanting.) The cranial bones coalesce, as a bird's, at a very early period, and leave no signs of sutures. The external ear is altogether absent; while the eyes, though small, are perfetly developed.

The bones of the shoulder, forming the scapular arch, are unlike those of any other mammals, and in some respects resemble those of birds, and in other respects those of reptiles. At the top of the sternum is a T-shaped bone, formed by the union of the two clavicles, corresponding to the *furculum* in the bird's skeleton. The coracoid bones, which in other mammals are mere processes of the scapula, are here extremely large, and assist, as in birds, in strengthening the scapular arch.



Monotremata:
The breast-bone and collar-bone of the Echidna.
(From Milne-Edward's *Zoology*.)

a, acromi or process of scapula; *d*, bone corresponding to the usual collar-bones of mammals; *h*, cavity for the articulation of the head of the humerus; *o*, the prolongation of the scapula to the sternum; *co*, the coracoid bone; *s*, the sternum; *c*, ribs.

while the scapulæ themselves are produced beyond the socket of the humerus (the glenoid cavity), so as to articulate with the sternum. The pelvis is provided with marsupial bones, though these animals do not possess a

pouch. The feet have five toes, armed with long nails; in addition to which, the hind-feet of the males are provided with a perforated spur-like weapon connected with a gland. The Australian aborigines believe the wounds made by this spur to be poisonous; but there is no scientific evidence of the fact. The ovaries are analogous to those of birds, the right ovary being comparatively undeveloped, while the left forms a racemiform mass. The orifices of the urinary canals, the intestinal canal, and the generative canal, open, as in birds, into a common cloaca, from which circumstance the order *Monotremata* derives its name. The mammary glands, of which there is only one on each side, are not provided with nipples, but open by simple slits on each side of the abdomen.—This order includes only two or three species, all natives of Australia, or Van Diemen's Land, which, however, form two families—the *Ornithorhynchidæ* (see DUCK-BILL), and the *Echidnidæ* (see ECHIDNA).—No fossil remains of any animal of this order have as yet been discovered.

MONOTRIGLYPH, n. *mŏn'ō-trī'glĭf* [Gr. *monos*, alone, and Eng. *triglyph*]: such an intercolumniation in the Doric order as brings only one triglyph over each column.

MONOTROPA, *mŏn-ŏt'-ro-pă:* genus of Ericaceæ: low herbs, parasitic on roots or feeding on decay, the whole plant without green chlorophyll, its food being organic. The petals and leaves are scale-like. The INDIAN PIPE (*M. uniflora*) is waxy-white, with one flower. The PINE-SAP (*M. hypopitys*), white, brown, or red, has a raceme of flowers. The s. *Sweet Pine-sap*, with violet-scented bell-flowers, is rare; as also *Pine-drops* (q.v.).

MONOXIDE, n. *mŏn-ŏks'īd* [Gr. *monos*, only, and Eng. *oxide*]: one of a series of oxides containing 1 equivalent of oxygen and 1 equivalent of another element; DIOXIDE contains 2 of oxygen and 1 of another element; TRIOXIDE contains 3 of oxygen and 1 of another element; SESQUIOXIDE, a compound intermediate between a *monoxide* and a *dioxide*, that is, containing $1\frac{1}{2}$ equivalent of oxygen to 1 of another element; thus CARBON MONOXIDE is an oxide containing 1 equivalent of carbon and 1 of oxygen.

MONREALE, *mōn-rā-ā'lā:* city of the island of Sicily, province of Palermo, 5 m. s.w. of the city of Palermo, on the flank of a steep hill. It has a cathedral, a palace, several conventual establishments, and possesses a healthful climate. The cathedral, begun about 1170, was and still is one of the most magnificent in Europe. Its extent is 80,630 sq. ft. The archiepiscopal palace and monastic buildings, were grand and splendid, but have mostly been rebuilt; though the cloister, remarkable for beauty, has been preserved. Its chief source of wealth is its export trade in oil, corn, and fruit; almonds being one of its most important products. Pop. 13,496.

MONRO, *mŭn-rō'*, ALEXANDER: Scottish anatomist: b. London 1697, Sep. 8; d. Edinburgh, 1767, July 10. He studied at Edinburgh, afterward in London under Cheselden, and still further both in Paris and Leyden, at the former under Bouquet, and at the latter under Boerhaave. On his return to Edinburgh in 1719 he was made professor of anatomy and surgery to the surgeon's company; in 1720, the first university professor of anatomy, though not inducted till 1725. He attended the wounded on the field at Prestonpans 1745, Sep. 21, and was an accurate observer, having studied the effects of the presence of solid bodies in the vermiform appendix, and otherwise anticipated later views. He resigned his professorship in 1764. His principal work is *Osteology, a Treatise on the Anatomy of the Human Bones* (1726), once a popular text-book.

MONRO, ALEXANDER: known as Secundus; Scottish anatomist: b. Edinburgh, 1733, May 20; d. there 1817, Oct. 2. He was son of Alexander Monro (1697—1767) (q.v.). Educated at Edinburgh University (M.D. 1755), he also studied on the continent, and in 1759-1808 lectured at Edinburgh. In 1783 he described the communication between the lateral ventricles of the brain, known as the foramen of Monro. He published *Three Treatises on the Brain, the Eye, and the Ear* (1797) and other medical works.

MONRO, ALEXANDER: known as *Tertius;* Scottish anatomist: b. Edinburgh 1773, Nov. 5; d. Craiglockhart, near Edinburgh, 1859, Mar. 10. He was the son of Alexander Monro (1733—1817) (q.v.). He obtained his M.D. at Edinburgh in 1797, was appointed conjoint professor with Monro *Secundus* of medicine, surgery and anatomy, and in 1817-46 was sole professor. His works include *Observations on Crural Hernia* (1803), and other publications, of no permanent value.

MONROE: city, parish-seat of Ouachita parish, La.; on Washita river, and on the Missouri Pacific and the Vicksburg, Shreveport & Pacific railroads; about 155 m. n. by w. of Baton Rouge and 55 m. e. of Shreveport. It has steamer connections with a number of towns on the Washita river. It is an agricultural section in which raising cotton and lumbering are the chief industries. There are cottonseed-oil mills, cotton compresses, brick yards, lumber mills, and wooden ware factories. There is a large trade in cotton and lumber. Pop. (1910) 10,209.

MONROE: city, county-seat of Monroe co., Mich.; on the Raisin river, and on the Michigan Southern, the Père Marquette, the Michigan Central, and the Lake Shore railroads; about 40 m. s.w. of Detroit and 85 m. s.e. of Lansing, the capital of the state.

It was settled in 1794 by people from Canada, and was first called Frenchtown. In 1815 the name was changed to Monroe in honor of James Monroe (q.v.). It was chartered as a city in 1836. Here took place 1813.

Jan. 22-23, the 'Battle of Raisin River.' The American losses in the battle were 397 killed, 537 captured; and the British losses were 24 killed and 158 wounded. Only 33 of the Americans escaped. A number of the American wounded and prisoners were left here by the British, in charge of a few soldiers. The Indians attacked and massacred all of them. The battle cry used later in the war of 1812 and afterward when disputes arose with the British, was, 'Remember the River Raisin.'

The city is in a fertile agricultural region and a trade centre for a large section of the southeastern part of the state. Its principal manufactures are flour, lumber, paper, paint, brick, agricultural implements, stoves, furnace products, furniture, and canned goods. The nurseries nearby and the fisheries give employment to a number of people. The chief buildings are the court-house, opera house, armory, and two orphan asylums, a home for the aged, St. Mary's Academy, a public library, and a convent. It has the mother house of the Sisters of the Immaculate Heart of Mary, a teaching order of sisters who have schools in various parts of the country, and whose pupils number about 10,000. In connection with the convent and academy are a large library and a fine museum. Pop. (1900) 5,043; (1910) 6,893.

MONROE: city, county-seat of Union co., N. C.; on the Seaboard Air Line railroad; about 120 m., in direct line, s.w. of Raleigh. It is in a cotton growing region, and nearby are gold mines. The chief industrial establishments are cotton mills, cotton gins, lumber mills, and iron works. The trade is principally in cotton, iron products, lumber, and tobacco. Pop. 2,570.

MONROE: city, county-seat of Green co., Wis.; on the Chicago, Milwaukee & St. Paul and the Illinois Central railroads; about 40 m. s. by w. of Madison. It is situated in an agricultural and stock-raising region, but its manufactures are quite important. In 1859 it was incorporated as a village, and chartered as a city in 1882. The chief manufactures are creamery products, condensed milk, machine-shop products, wagons, carriages, lumber, and foundry products. The trade is principally in the manufactures of the city, farm and dairy products and live-stock. It has good schools and a fine public library which contains about 5,000 volumes. Pop. 4,000.

MONROE, HARRIET: American author: b. Chicago, Ill., 1860, Dec. 23. She was graduated from the Visitation Academy, Georgetown, D. C., in 1879 and has since devoted herself to literature. In 1889 she wrote the text of the cantata given at the opening of the Chicago Auditorium and in 1891 wrote by request of the committee the *Columbian Ode*, which was sung at the dedicatory ceremonies at the World's Columbian Exposition in 1892. She has published: *Valeria and Other Poems* (1892); *John Wilborn Root—a Memoir* (1896): *The Passing Show* (1903); etc.

MONROE, *mŭn-rō'*, JAMES: fifth president of the United States: 1758, Apr. 28—1831, July 4 (pres. 1817–25); b. Westmoreland co., Va.; descended, according to the family tradition, from a Capt. Hector M. of the army of Charles I., a Scotch cavalier who emigrated with other cavaliers to Va. M. entered William and Mary College, but left it at the outbreak of the revolution, 1776, to join the continental army as lieut.; was wounded in the shoulder while leading the advance-guard at the battle of Trenton; lost his rank by serving as an aid 1777–8, taking part in the battles of Brandywine, Germantown, and Monmouth. After the war he studied law under Jefferson, who remained his close friend till his death, and who exerted a great influence upon him. In 1782 M. was elected to the assembly from King George co. and, though but 23 years old, was appointed by that body to the executive council. He was chosen a delegate to congress in 1783, and was active in the movement that led to the convention at Annapolis and the adoption of the federal constitution. He later, however, opposed its ratification, and took sides with the states' rights men. He was active in devising a system for the colonization of the public lands; was on the commission to settle the boundary between Mass. and N. Y.; and insisted on maintaining the right of the United States to navigation on the Mississippi. M. was a strong anti-federalist, vigorously opposing the administrative policy of Washington, and the financial policy of Hamilton. He had married in 1785, and his turn in congress expiring next year, he settled in Fredericksburg, Va.; but, 1787, was re-elected to the general assembly, and, 1788, a delegate to the constitutional convention. Though one of the minority opposed to ratification, he was one of the first to hold office under the new constitution, being selected by the legislature to fill the vacancy in the senate caused by Grayson's death. He was senator 1790, Dec.—1794, May, when he was sent by Washington as minister plenipotentiary to France, where he was so popular as to be suspected of French sympaties by the administration, and, 1796, Aug., he was recalled. 1799–1802 he was gov. of Va.; and 1803 was appointed by Jefferson minister to France to negotiate the purchase of Louisiana, which he, with the resident minister, Mr. Livingston, succeeded in doing for $15,000,000, two weeks after M.'s arrival in Paris. The same year he was made minister to England to secure measures against the impressment of seamen, and then to Spain to settle the disputes between that country and the United States with reference to the boundaries of La. In 1806 he was sent again to England to conclude, with Mr. Pinckney, negotiations for securing neutral rights. His mission was not satisfactory, and 1807 he was recalled to America. Here he was urged as a candidate for the presidency, but withdrew his name; and Madison having been elected, 1809, he made M. sec. of state, 1811; besides which he had also to perform the duties of sec. of war after the capture of Washington by

JAMES MONROE.

the British 1814. He was elected to the presidency 1816, receiving 183 electoral votes against 34 for Rufus King, the federalist candidate. During his administration the states of Miss., Ill., and Maine were admitted into the Union; Fla. was purchased from Spain; and a treaty was concluded with England regarding the Newfoundland fisheries and the return of fugitive slaves. In 1820 he was re-elected with only one electoral vote in opposition to him. In 1821 Mo. was admitted into the Union, resulting in the 'Missouri Compromise,' by which, while slavery was permitted in Mo., it was forever prohibited north of lat. 36° 30′ elsewhere. It was during his second term that the independence of Mexico was recognized, and 1822 that of the provinces in S. America formerly under Spanish dominion. In 1823, Dec. 2, he issued his famous annual message containing the declaration of what has since been known as the 'Monroe doctrine,' and which defines the policy of the United States in its foreign relations. That policy is declared to be one of non-interference with the affairs of European nations, and insistance on a similar non-interference on the part of European governments with the affairs on the American continent—except as relates to the Brit. possessions in Canada. It declares that no European powers can 'extend their political system to any portion of either [American] continent, without endangering our peace and happiness. . . . It is equally impossible, therefore, that we should behold such interposition, in any form, with indifference.' After M.'s term of office expired, 1825, he retired to his home at Oak Hill, London co., Va., but continued serving his fellow citizens in various capacities, as justice of the peace; and 1829 as pres. of the convention to revise the old state constitution, which position, however, ill-health compelled him soon to resign. His wife died 1830, which, added to pecuniary embarrassment—the result in part of profuse hospitality—constrained him to remove to the home of his son-in-law, Samuel L. Gouverneur, in New York, where he died a year later. His body was removed from New York, and reinterred with imposing ceremonies in Hollywood Cemetery, Richmond, Va., 1858, July 5. It may be true, as Madison thought, that the country never fully appreciated M.'s services. His intellect was not brilliant, he had no gift as orator, he was influenced by strong party-feeling; still he was, through all, honestly desirous of serving his country. He developed the resources of the nation more than any one before him; the army and navy were enlarged and thoroughly organized; commerce was protected; the nation's finances improved; and the public service made more vigorous and efficient. The full story of his life, says his biographer, Prof. Gilman, in the 'American Men of Letters series,' 'will always reveal the mind and heart of a patriot, in new and trying situations, true to the idea of American independence from European interference.'

MONROE' DOCTRINE: see MONROE, JAMES.

MONRO'VIA: capital of Liberia (q.v.).

MONS, *mōngss* (Flem. *Berghen*): important town of Belgium (formerly fortified), cap. of the province of Hainault; on the Trouille, 35 m. s.w. of Brussels. Its fortifications were renewed and strengthened after 1818; but in 1866 in accordance with new arrangement for the defense of the country, they were demolished. The immediate vicinity can be laid under water by altering the course of the Trouille. The *Canal de Condé* connects the town with the Scheldt, and there is communication by railway with Brussels, Valenciennes, Charleroi, etc. Its principal architectural ornament is the cathedral of St. Waudru, dating from the 15th and 16th c.—a masterpiece of Gothic. The chief manufactures are woolen and cotton goods, cutlery, small-wares, and sugar-refining. The vicinity forms an extensive coal-field, with about 400 pits, which give employment to the people of six large villages with a pop. in all of nearly 70,000; the annual product of coal is two to three millions of tons. There is large trade in coals, flax, hemp, horses, and cattle. Pop. (1901) 26,989. M., supposed to occupy the site of a Roman station, was made cap. of Hainault by Charlemagne 804. During the 17th and 18th c., it was frequently the object of contest between France and Austria.

MONSEIGNEUR, n. *mŏng-sēn'yür* [F. *monseigneur*—from *mon*, my; *seigneur*, lord: It. *monsigno're*, my lord—from *signore*, lord]: in *France*, a title of courtesy properly belonging to princes, cardinals, and bishops; but in courtesy prefixed also to names of persons of high rank, or to titles of noblemen; a title of bishops, etc., in France; my lord; your grace or highness. This title was not applied to bishops till near the beginning of the 18th c., at which time they acquired it by general agreement so to address each other: its use was forbidden to them in France by the convention 1801. MESSEIGNEURS, n. plu. *mĕs-sēn'yĕrz*, my lords. MONSIGNOR, n. *mŏn-sēn'yŏr*, or MONSIGNORE, n. *mŏn'sēn-yōr'ā*, ordinary title of a bishop in the Rom. Cath. Chh.; honorary title conferred on certain priests attached to the Court of Rome: usual abbreviation, *Mgr.*, plu. *Mgrs.*

MONSELICE, *mōn-sā-lē'chā:* town of n. Italy, 13 m. s.e. of Padua. Pop. 3,160.

MONSIEUR, n. *mŏs'sür* [F. *monsieur*—from *mon*, my; *sieur*, sir, master]: sir; Mr.; also, denoting a Frenchman, in slight contempt. MESSIEURS, n. plu. *mĕs'sū*, sirs. The title *Monsieur*, formerly applied in France to men of middle rank, is now universally applied to gentlemen. Its abbreviation is *M.*, sometimes *Mons.*; plu. *MM.*, sometimes *Messrs.* It is used also as a prefix to titles of rank or of office (in the latter case corresponding to our Mr. President, Mr. Secretary, etc.). In the middle ages it was prefixed to the title 'Saint', also to the names of popes and royal persons when spoken of. The oldest brother of the French king had it as his special title, being often spoken of as simply 'Monsieur'.

MONSIGNOR, etc.: see under MONSEIGNEUR.

MONSON, *mŭn'son:* town in Hampden co., Mass., 15 m. e. of Springfield, on the Boston and Albany, and New London and Northern railroads, 80 m. w.s.w. of Boston. It has valuable quarries of gneiss, manufactories of woolen goods, and of hats and bonnets, a national bank, several churches, a state school for the children of paupers of foreign birth, and a long-established, widely known, and successful academy of high grade, at which preparation for entering college has been made by many men of note in America.—Pop. (1870) 3,204; (1880) 3,758; (1890) 3,650; (1900) 3,402.

MONSOON, n. *mŏn-sôn'* [It. *monsone;* F. *mousson;* Port. *monçao*, a monsoon—from Ar. *maasaan*, or *mausim*, season]: periodical wind of the Indian and Arabian seas, blowing regularly from the s.w. from Apr. to Oct., and from the n.e., from Oct. to Apr. The existence of these winds was made known to the Greeks during the Indian expeditions of Alexander, and by this knowledge, Hippalus was emboldened to sail across the open sea to Muzeris, the emporium of Malabar. The monsoons depend, in common with all winds regular or irregular, on the inequality of heat at different places and the earth's rotation on its axis; but particularly they are occasioned by the same circumstances which produce the trade-winds and the land and sea breezes, being, in fact, the combined effect of these two sets of causes.

If the equatorial regions of the earth were entirely covered with water, the trade-winds (see TRADE-WINDS) would blow constantly from the n.e. in the north, and from the s.e. in the south of the torrid zone, with a belt of variable winds and calms interposed; the whole system, following the sun's course, moving northward from Dec. to June, and southward from June to Dec. But, especially in the e. hemisphere, large tracts of land stretch into the tropics, and give rise to the extensive atmospheric disturbances for which those parts of the earth are remarkable. During the summer half of the year, n. Africa and s. Asia are heated to a higher degree than the Indian Ocean, while Australia and s. Africa are much colder. As the heated air of s. Asia expands and rises, and the colder air from the s. flows in to supply its place, a general movement of the atmosphere of the Indian Ocean sets in toward the n., thus causing the wind to come from a *southerly* direction; but as the air comes from those parts of the globe which revolve more quickly to those which revolve more slowly, an eastward movement will be communicated to the wind, causing it to come from a *westerly* direction; and the combination of these two directions results in the s.w. monsoon, which prevails there in summer. Since, during winter, s. Asia is colder than the Indian Ocean, which, again, in its turn, is colder than s. Africa, a general motion of the atmosphere sets in toward the s. and w.: as this is in the same direction as the ordinary trade-wind, the effect in winter

is not to change the direction, but only to increase the velocity of the trade-wind. Thus, while s. of the equator, owing to the absence of sufficiently large tracts of land, the s.e. trade-winds prevail throughout the year; on the n. of the equator we find the s.w. monsoon in summer, and the n.e. in winter; it being only in summer and n. of the equator that great changes are effected in the direction of the trade-wind.

Similar, though less strongly-marked monsoons prevail off the coasts of Upper Guinea in Africa, and Mexico. The e. and w. direction of the shores of these countries, or the large heated surfaces n. of the seas which wash their coasts, produce, precisely as in the case of s. Asia, a s.w. monsoon in summer. As might have been expected, the monsoon off the coast of Mozambique is easterly, and that off the coast of w. Australia northwesterly. The trade-winds also undergo considerable change in their direction on the coasts of Brazil, Peru, Lower Guinea, etc. These winds, though sometimes considered monsoons, are not truly such, for they do not change their directions periodically, so as to be opposite to each other, like true monsoons, but only veer through a few points of the compass. For a fuller account of these partial deflections, see TRADE-WINDS.

In India, in Apr., the n.e. monsoon changes into the s.w.; and in Oct., the s.w. into the n.e. These times depending on the course of the sun, consequently varying with the latitude, are called the breaking up of the monsoons, and are generally accompanied by variable winds, by intervals of calm, and by furious tempests and hurricanes.

Monsoons, when compared with the trade-winds, are seen to act a most beneficial and important part in the economy of the globe. Their greater velocity, and the periodical changes in their direction, secure increased facility of commercial intercourse between different countries. But the full benefits following in their train are not seen unless they be considered in their relation to the rainfall of s. Asia. Indeed, the fertility of the greater part of this fine region is due entirely to the monsoons; for if the n.e. trade-wind had prevailed there throughout the year, central and w. India, and many other regions, would have been scorched and barren saharas. The rainfall of India depends entirely on the monsoons. The coast of Malabar has its rainy season during the s.w. monsoon, which brings thither the vapors of the ocean. On the Coromandel coast, on the other hand, it is the n.e. monsoon which brings the rain from the Bay of Bengal. The two coasts of Hindustan have therefore their seasons reversed, the dry season of the one corresponding with the wet season of the other.

MONSTER, n. *mŏn′stėr* [F. *monstre*—from L. *monstrum*, anything strange or wonderful: Sp. *monstro*]: something out of the common order of nature; a creature with parts not natural, or greatly malformed (see MONSTROSITY, in Anatomy); a person looked upon with horror on account of extraordinary crimes, or of deformity, or power to do harm; anything uncommonly large: V. in *OE.*, to put out of the common and natural order of things. MON′STERING, imp. MON′STERED, pp. *-stėrd:* ADJ. very great in size or numbers. MONSTROUS, a. *mŏn′strŭs*, unnatural in form; huge; enormous; shocking; hateful; horrible: AD. in a monstrous manner; exceedingly; very much. MON′STROUSLY, ad. *-lĭ.* MON′STROUSNESS, n. *-nĕs*, the state of being monstrous. MONSTROSITY, n. *mŏn-strŏs′-ĭ-tĭ*, state of being monstrous; an unnatural production; that which is monstrous; a monster: see MONSTROSITY, in Anatomy: MONSTROSITY, in Botany.

MONSTRANCE, n. *mŏn′străns* [L. *monstrans*, showing]; called also OSTENSORY: in the Rom. Cath. Church, the sacred utensil employed for presenting to view the consecrated Host (q.v.) for the adoration of the people, as well while it is carried in procession, as when it is exposed upon the altar on occasions of special solemnity and prayer. The use of the M. probably dates from the establishment of the festival of Corpus Christi, 13th c. It consists of two parts, the foot or stand upon which it rests, and the repository or case in which the host is exhibited. The latter contains a small semi-circular holder called the *lunula*, or crescent, in which the host is fixed; and it appears anciently to have been of a cylindrical or tower-shaped form, in the central portion of which, consisting of a glass or crystal cylinder, the host was placed. At present, it is more commonly in the form of a star or sun with rays, the central portion of which is of glass or crystal, and serves to permit the host to be seen. This portion, or at least the crescent, is of gold or of silver gilt; the rest is generally either of the precious metals, or at least gilt or silvered, though the lower portion is occasionally of bronze artistically wrought. In many cases, it is of most costly materials and workmanship. The M., like the other vessels used in the Eucharistic service, is consecrated by a bishop, or a priest delegated by a bishop. By a peculiar usage of the city of Lucerne, in Switzerland, the Eucharist is always carried in the M., when being borne to the sick.

Monstrance.

MONSTROSITY.

MONSTROSITY, in anatomy: unnatural malformation at birth: term applied to an infant, or the young of any animal, which comes into the world impressed with the morbid changes that occur in fetal life, and of which it has never been observed that they have originated in the same way after birth. The term monster has frequently the same application. Monsters were formerly regarded as prodigies of nature; and in the dark ages, their occurrence in the human species was usually ascribed to the intercourse of demons with witches. It is now perfectly understood that the formation of those apparently anomalous beings may be accounted for by the same laws as those which govern the formation of perfect individuals—the only difference being that these laws in the case of monstrosity are more or less arrested or otherwise perverted.

Among principal causes of monstrosity are: 1. Something deficient or abnormal in the generative matter of one or both parents, because (see HEREDITY) malformations are frequently transmitted from parents to the children. Here the morbid change is impressed on the fetus at the moment of impregnation. 2. Some morbid condition of the maternal organs or constitution may exercise a disturbing influence upon development. 3. Diseases and abnormal states of the placenta, of the membranes of the ovum, and of the umbilical cord, may induce arrest of development; for example, it may be easily understood how abnormal shortness of the cord may favor the origin of fissure of the abdomen; while a cord of disproportional length may coil round one of the extremities, and by constriction may dwarf it, or even amputate it. 4. Morbid influences acting directly on the fetus—e.g., mechanical injuries and diseases affecting it—are most frequent causes of malformations. From the experiments of several observers, it has been shown, that by submitting hen's eggs to various mechanical influences during incubation, the development of the embryo may be interrupted, or modified in such a manner as to give rise to malformations; and many observations tend to prove, that mechanical influences affecting the womb (kicks, blows, or falls) in the early months of pregnancy, may produce certain malformations, by causing arrest of development. Moreover, the fact that certain malformations usually occur only in twin or triplet pregnancies, favors the view, that certain monstrosities are due to pressure and confined space. The influence of 'maternal impressions,' i.e., a powerful mental shock or obsession of the pregnant woman, in causing malformation of the fetus has been held by many writers, but it is difficult to comprehend how such influences can affect the formation of the child in utero, especially in the later months of pregnancy.

Of the various classifications of monstrosities, the following is perhaps the best: 1. Malformations in which

certain parts of the normal body are entirely absent, or are too small. 2. Malformations produced by fusion or coalescence of organs. 3. Malformations in which parts naturally united, as in the mesial line of the body, are separated, and clefts or fissures occur. 4. Malformations in which natural openings are closed. 5. Malformations of excess, or in which certain parts have attained disproportional size. 6. Malformations in which one or more parts have an abnormal position. 7. Malformations of the generative organs.

The *first class* includes (1) completely shapeless malformations, in which the monster presents the appearance of a lump or mass, with no indication of definite organs; (2) malformations which consist of only a more or less rudimentary trunk, with no head or extremities; (3) trunkless monsters, in which the inferior parts of the body are lacking, and little more than a rudimentary head is present, which, instead of neck and trunk, is furnished with a pouch-like appendage, containing rudimentary viscera and pieces of bone; (4) malformations in which the head, and sometimes a portion of the upper part of the body, are wanting, constituting acephalic monsters, which are not very rare; (5) malformations in which the whole head is not absent, but some of its component parts are lacking; e.g., the brain, some of the cranial bones, the nose, or the eyes; (6) cases in which the extremities are absent or imperfect to greater or less degree—e.g., they may be mere stumps, with the fingers and toes either absent or rudimentary, or the hands and feet may appear to exist independently of arms and legs, and to be inserted immediately into the trunk; (7) cases in which all the organs may be present, but some of them may be too small—thus, there may be general dwarfishness, or the head or limbs may be abnormally small. None of the monsters of this class, except those included in the last two groups, are viable.—In the *second class* are included such cases as (1) the various forms of *cyclopia*, or coalescence of the eyes; these malformations are not very rare in the human subject, and are frequent in pigs and other animals; though usually born alive, these monsters are not viable; (2) coalescence of the lower extremities either into a common limb, which supports two feet, or into an undefined tail-like mass; (3) minor amalgamations, which do not affect vitality, as more or less perfect coalescence of the fingers and toes.—The *third class* embraces such cases as (1) fissures of the cranium, generally due to hydrocephalus in the fetus; (2) harelip and cleft palate; (3) fissures on the neck, whose origin is due to the respiratory clefts (which, during the formation of the embryo, appear in the cervical region) not uniting at an early stage, as in the normal condition, but remaining more or less open; (4) fissures of the vertebral arches of the spinal column, occasioning the affection known as *spina bifida;* (5) fissures of the

thorax, in which case the lungs or heart are more or less exposed; (6) fissures of the abdomen.—The malformations of the *fourth class* include congenital closure of the anus, the mouth, the nostrils, etc.—The malformations of the *fifth class* may be arranged in two divisions, according as certain parts are too large, or there are supernumerary organs. This class is very extensive, and embraces many varieties. One or more parts may be disproportionally large—e.g., the head in cases of congenital hydrocephalus; or there may be one or several supernumerary organs—a sub-class which presents a very great range, from the simplest cases, in which a single joint of a finger is supernumerary, to those of a highly complicated nature, when two or even three bodies are united by some one point. There may be a single head and trunk and supernumerary parts—as, for example, supernumerary teeth, vertebræ (giving rise to the formation of a tail in the human subject), ribs, mammæ, fingers, toes, etc.; or there may be malformations with more than one head and trunk—double, or even triplet monsters. This sub-class is divisible into two groups, according as the united individuals are equally developed, or as only one is developed; the second being more or less atrophied, and forming a parasitic appendage to the first. Examples of the first group, are (1) duplication of the head and upper part of the vertebral column; (2) duplication of the head, neck, and upper extremities, while the chest and abdomen are single, or fused into one another; (3) almost complete duplication, with separation of the two bodies, except at a single spot, as in the case of the Siamese twins; (4) triplet monsters. To the second group belong such cases as the following: (1) a perfect individual may bear on its head another head, with traces of the rest of the body; (2) on a well-developed body, a second, smaller and defective one, may be situated, which, after birth, does not increase in size; (3) in a more or less perfectly developed individual, there may be concealed, commonly in the abdomen, parts of a second individual—a condition which has received the name of *fetus in fetu*, and which is probably caused by the inclusion of one germ by another.—To the *sixth class* belong (1) those cases in which there is a reversing of the position of the internal organs—when the heart and spleen lie on the right, and the liver and cæcum on the left side; (2) anomalies in the course and distribution of individual vessels.—For malformations constituting the *seventh class*, see HERMAPHRODITISM.

The term *Teratology* [Greek *tĕras*, a prodigy, and *lŏgos*, a discourse] is now frequently applied to the history and science of monstrosities. Consult: Saint Hilaire *Histoire des anomalies de l'organisation* (Paris 1832-6); Hirse and Piersol, *Human Monstrosities* (Philadelphia 1891); Fitch, *Hermaphroditism*, in *New York Medical Journal* (1890, Nov. 22).

MONSTROS'ITY, in Botany: malformation or abnormal development of any part of a plant. It may take place, however, at any period of the growth of a plant, as to any new organ that is developed, and sometimes affects merely a particular organ or some portion of a plant, e.g., a particular leaf, flower, petal, sepal, etc., or the leaves or flowers of a particular branch, while in other cases all the organs of the same kind exhibit the same abnormal character. It is now well known that monstrosities in plants as in animals are the result of special conditions affecting the operation of ordinary natural laws; and the study of monstrosities is very important in relation to that of the nature, development, and metamorphosis of organs. For some of the most frequent monstrosities, see METAMORPHOSIS OF ORGANS. Monstrosities in plants are not always, as in animals, reckoned deformities. *Double flowers* afford a familiar example of an opposite kind; though in relation to the plant itself they have the effect of unfitting it for one of the functions of a perfect plant, reproduction by seed.

MONSTROSITY, MONSTROUS, etc.: see under MONSTER.

MONSTRUOSITY, n. *mŏn'strô-ŏs'ĭ-tĭ:* OE. for MONSTROSITY.

MONTAGNANA, *mōn-tân-yâ'nâ:* town of n. Italy, province of Padua, situated pleasantly on the banks of a canal, Il Fiumicello, 32 m. s.w. of Padua. It is still protected by walls and towers, and has a fine cathedral and palace. Its chief trade is in spun-silk, wool, hemp, and coarse cotton textures. Pop. 7,657.

MONTAGNARDS, *mōng-tân-yâr'*, or simply MONTAGNE, 'the Mountain': name given to the extreme democratic politicians in the first French Revolution, because they seated themselves on the higher benches of the hall in which the *National Convention* met, 1789–91. Their principal members were Danton, Marat, Robespierre, St. Just, and Collot d'Herbois, the men who introduced 'the Reign of Terror.' The opposite party of the 'Plain' (*Plaine*) were the Girondists (q.v.), who sat on the lowest benches on the floor of the house. After the overthrow of the Girondists, this part of the house was styled the 'marsh or swamp' (*marais*), and included all the subservient members whose votes were under the control of 'the Mountain.' A few leading men gave all its strength and formidable character to the party of the Mountain.—After 1848, the extreme party in the *National Assembly*, composed of revolutionary democrats and communists, sometimes flattered itself with the designation of 'the Mountain;' but events proved that it possessed nothing of the genius, though it showed all the malignity of its terrible predecessor.

MONTAGU, CHARLES: see HALIFAX, EARL OF.

MONTAGU, *mŏn′ta-gū*, Family of: family in the English nobility, said, by Burke, to derive their name (which in Latin was and is always written De Monte Acuto) from a place in Normandy. The first of the M. who settled in England was a warrior who came over in the train of Robert Earl of Moreton at the Conquest 1066.—Five centuries later, his descendant, Sir Edward Montagu, was lord chief justice, in succession, of the courts of king's bench and common pleas under Henry VIII., who also appointed him one of the executors of his will and guardians of his son Edward.—His grandson, a distinguished orator, represented the city of London in parliament: and having been lord chief justice of the court of king's bench, and lord treasurer of the kingdom, was raised to the peerage as Earl of Manchester.—The second earl gained distinction as a gen. in the parliamentary army, and particularly by his victory over Prince Rupert at Marston Moor; but he scrupled to take part in the condemnation and beheading of Charles I., and was one of the first members of the house of peers who gave in his adhesion to Charles II. on his restoration.—This nobleman's grandson enthusiastically espoused the cause of William III., under whom he fought at the battle of the Boyne, and took part in the siege of Limerick. He was subsequently sent as ambassador to Venice, and to the courts of France and Vienna, and eventually was raised to the dukedom of Manchester by George I.—The title is held by his descendant, the 7th duke.—Other branches of the M. family were ennobled in the persons of the Earl of Sandwich, the Earl of Halifax, and the Duke of Montagu, but the last two titles both became extinct before the close of the 18th century.

MON′TAGU, Lady Mary Wortley: 1690–1762, Aug. 21; b. Thoresby, Nottinghamshire, England; daughter of Evelyn Pïerrepont, Earl, afterward (1715) Duke of Kingston, and of Lady Mary Fielding, daughter of the Earl of Denbigh. She is said to have received a classical education. When only eight years of age, she was introduced by her father to the famous *Kit-Cat Club*, and formally admitted a member. Her fond and pleasure-loving father allowed her to educate herself. She is even said to have taught herself Latin. She became attached to Edward Wortley Montagu, member of the house of commons, whose cousin, Charles Montagu, was created Earl of Halifax and appointed first lord of the treasury by George I. As the match was disapproved by the families, she eloped and married him. On the accession of George I., she came to London with her husband, who was a whig. Lady Mary's beauty and wit attracted universal admiration at court. She was on terms of familiar acquaintance with Addison and Pope, the latter becoming her enthusiastic admirer, and writing 'flames and raptures' for her, until his passion 'came to a climax in an impertinence, and was extinguished by a box on the ear, or some such rebuff.'

In 1716, Wortley Montagu was appointed ambassador to Constantinople. He was accompanied by Lady Mary, who, on her journey, and during her residence in the Levant, wrote the well-known *Letters*, which form one of the most delightful books in our language. The weaknesses of a somewhat vain and capricious temper fade into forgetfulness, when we remember the strong sense, enlightened courage, and generous perseverance which introduced into Europe the practice of inoculation (q.v.), which she witnessed in Turkey. She had so much faith in its safety, that she tried it first on her own son. After her return to England, she fixed her residence at Twickenham, and renewed her intimacy with Pope. But political soon led to personal differences, and these resulted in one of the most famous literary feuds of the 18th c. The immediate occasion of it was the publication by Lady Mary of her *Town Eclogues*. She was fiercely assailed by both Swift and Pope, and was not slow to retaliate. In 1737 she left her country and her husband (for reasons not known), and lived many years in Italy, chiefly at Lovero, in the province of Venice. Her husband died 1761. At the request of her daughter, afterward wife of the Earl of Bute, she returned to England, where she died. She was brilliant, eccentric, unconventional, always liable to be misunderstood; but her letters show her to have had a warm heart. A collected ed. of her works, with life, was published by her great-grandson, the late Lord Wharncliffe, 1836, of which a third ed. (the best) appeared 1861, with memoir by Moy Thomas.

MONTAIGNE, *mŏn-tān′*, F. *mōng-tāñ′*, Michel Eyquem de: distinguished French moral philosopher: 1533, Feb. 28—1592, Sep. 11; b. at his paternal home of Montaigne, in Perigord. In accordance with his father's eccentric ideas on education, he was taught and allowed to speak only Latin from his earliest infancy, in consequence of which he acquired such mastery of the laugnage, that when, in his seventh year, he entered the college of Bordeaux, with its 2,000 scholars, his masters, Guérente, Buchanan, and Muret, were almost afraid to address him. On the expiration of his studies, which were directed to law, he received 1554 the appointment of councilor in the parliament of Bordeaux; but being possessed of ample means, and having no inclination for a public life, he applied himself to the study of the various schools of Greek and Roman philosophy; and on the death of his father, in compliance with whose wish he had made a translation of the nat. theology of Raymundus Sebondus (Paris 1569), he retired to his ancestral estate, where he lived in retirement during the terrible season of religious oppression which desolated France for many years. During this period, 1580, he composed the first two books of his celebrated *Essais*, the third portion of which appeared 1588, after his return from extensive travels. M.'s *Essais*, though not conceived in the spirit of a believing Christian, or marked by the reticence and

delicacy of expression which modern refinement demands, are very extraordinary productions, not only for their learning and sound reasoning, but also for the frank and liberal tone in which social questions are discussed, notwithstanding that the author wrote at a period when religious differences and party feelings blinded the judgments of men. M.'s ethics were those of Seneca and the other philosophers of ancient times, whose works he had thoroughly mastered; and, judged from our point of view, his morality is that of a virtuous pagan merely; but when we bear in mind the turmoil of civil war, and the consequent disorganization of society, together with the low ebb of literature in France at that period, we must do justice to the great merit of the writer, and the influences for good which his writings exerted. His writings give charm rather than inspiration; the style is flexible and easy; and though method is almost lacking, M. deals in deft touches of genial humor with almost all of human life. It was part of his humor to assume an attitude of pessimism; but the real spirit of his work and its actual influence will be found more in accord with deep truth than his mere expressions at first suggest. M. was a constant, and occasionally a successful, mediator between the party of Henry of Navarre and that of the Guises, and stood in relations of friendship with men of all creeds. He died as an avowed member of the Church of Rome, in whose doctrines he professed implicit faith, notwithstanding the skeptical bias which he had through life been at no pains to conceal. Numerous editions have appeared of his *Essais*, among which are those of Le Clerc (Paris 1826), and MM. Courbet and Royer (Paris 1873–77). Nearly 200 years after his death, the discovery was made at Montaigne of the MS. of his travels, published at Paris 1774, under the title of *Journal de Voyage de M. de M. en Italie par la Suisse et l'Allemagne*. Translations of the *Essais* exist in almost all the European languages; the best English translation is that by Cotton. The best biographies of M. are by Grün (Paris 1855); Payen (Paris 1856); and Bayle St. John (Lond. 1857).

MONTAJONE, *mōn-tâ-yō'nā:* town in n. Italy, about 25 m. s.w. of Florence. It is not far from the coast, and has famous medicinal springs. Pop. 10,553.

MONTALCINO, *mōn-tâl-chē'nō:* town in the province of Siena, central Italy, 22 m. s.s.e. of the town of Siena; on a hill in the midst of valleys. It has a fine equable climate. The wine of M. is in great repute throughout Tuscany. Pop. 7,540.

MONTALEMBERT, *mōng-tâ-lŏng-bär'*, Charles Forbes, Comte de: 1810, May 29—1870, Mar. 13; b. London; of an ancient family of Poitou. His father was created a peer of France 1819 under the Restoration, and for a considerable time was minister of the French court in Sweden. His mother was of the Scottish family of Forbes, which fact accounts for M.'s remarkable familiarity with the English language, and his intimate knowledge and strong admiration of the social and political institutions of England. Although his more advanced studies were carried on in the University of Paris, a considerable part of his youth was spent in Sweden; and the first work by which he was brought into notice was a pamphlet on Sweden, published in his 19th year. On the death of his father, M. succeeded to his honors, and later to his seat in the chamber of peers. But his earliest public appearance was in what may be truly considered the great labor of his life, a joint effort in which he associated himself with the Abbé Lacordaire (q.v.) and other friends, for the purpose of taking advantage of the recent charter, by establishing a free school for Liberal Catholic education, independent, as well of the university, as of all other state influence. An attempt by the police to interfere arbitrarily with this project, became the subject of a trial before the chamber of peers, which M. rendered memorable by his first speech, one of the most brilliant on record, and a clear foreshadowing, not alone of the eloquence, but of the bold and uncompromising earnestness in the cause of his church and of the common interests of religious liberty, which constantly characterized his later career. Of the struggle of the Liberal Catholic party in France against what they regarded as the arbitrary monopoly of education which was claimed for the university, M. was for many years the leader and the champion; and he never ceased to advocate the same principles in the various works in the preparation of which he employed his leisure from public duties—*Life of St. Elizabeth of Hungary*, *Life and Times of St. Anselm*, and, above all, an appeal *On the Duty of Catholics on the Question of Freedom of Education*, which he wrote during a visit to the island of Madeira for his health 1843. After the revolution of 1848, M., true to his former professions, was one of the first of his party to accept the new state of things, and to use the actual means at his disposal for the furtherance of the views which he had consistently advocated. He was elected member of the national, and afterward of the legislative assembly; and for a time contrived, while he continued the same line of policy as regards church interests, to give a general support to the govt. of Louis Napoleon as pres. of the republic. His first break with that govt. was on the question of the proposed confiscation of the Orléans property; and after the *coup d'état* of December, the breach became irreconcilable. From that time M. continued the implacable assailant of the arbitrary repression of public opinion

which characterized some measures of Napoleon III.; and the brilliant and enthusiastically admiring pictures which, in his *Political Future of England*, he has drawn of its social and political institutions, derive much of their vigor from their covert but palpable contrast with the condition of France. M. had strong religious sentiment, and was gifted with an almost too fluent eloquence. Besides numerous articles contributed by him to the *Revue des Deux-Mondes*, the *Encyclopédie Catholique*, and the *Correspondant*, he wrote: *L'Avenir politique de l'Angleterre* (1855); *Les Moines d'Occident depuis St. Bénoît jusqu'à St. Bernard* (1860–67; his chief work; English translation, 7 vols. 1861–79); *Une Nation en deuil, la Pologne en* 1861; *L'Eglise libre dans l'Etat libre* (1863); *Le Pape et la Pologne* (1864), etc. See Memoir by Mrs. Oliphant, 2 vols. (1872).

MONTALIVET, *mōng-tā-le-vā'*, Murthe Camille Bachasson, Count de: 1801, Apr. 25—1880, Jan. 4; b. Valence, France: statesman. He was educated in the Polytechnic School in Paris; took his seat in the chamber of peers 1826; was appointed minister of the interior 1830, Nov., minister of public instruction 1831, Mar., and again minister of the interior 1837, Apr.; and was elected a senator 1879. He was a strong constitutional monarchist; supported the Orléans family; opposed Guizot and the *doctrinaires;* and gave his adhesion to the republic 1872, as presenting the only form of free govt. then possible for France. He published, in defense of the Orléans family, *Le Roi Louis-Philippe et la liste civile* (1851), and *Dix années de gouvernement parlementaire* (1862).

MONTALVAN, *mon-tâl-vân'*, Juan Perez de: 1602–1638, June; b. Madrid: dramatist. He was a son of the royal bookseller; became a licentiate in theol. in 1619; began writing for the theatre under the direction of Lope de Vega about the same time; was ordained a priest 1625; and by 1632 had written 36 dramas and 12 *autos sacramentales*. The pressure of dramatic writing made him insane shortly before his death. Besides the above dramas he left about 60 plays, and *Orfeo*, poem (1624), *Life and Purgatory of St. Patrick* (1627), *Para todos*, stories (1632), and a tribute to his friend Lope de Vega (1636).

MONTANA, *mŏn-tâ'na:* state; one of the United States of America; 28th in order of admission to the Union, and thus the 41st state.

Location and Area.—M. is one of the extreme n.w. states; lat. 44° 15′—49° n., long. 104°—116° w.; length on n. border 540 m., along 45th parallel 460 m.; average breadth n. and s. 275 m.; 146,080 sq. m. It is bounded n. by the Dominion of Canada, w. and s.w. by Idaho, s. by Wyoming, e. by S. Dak. and N. Dak.; average elevation above sea-level about 3,900 ft.

Topography.—M. has two great natural divisions, according to the general character of the country: 1. The western third, the character of which is made by the mountains, which form the crest of the continent and have given M. the name of 'the mountain state;' and 2, the eastern two-thirds, a vast expanse of plateaus, rolling prairies, and level plain, especially in the n.e. The mountain region consists of a succession of ranges and valleys running generally n.w. and s.e. Besides the main range of the Rocky Mts., which enters the w. part of M. from the n. and extends 200 m. s.e., and there bends in the direction of the w. boundary, there are the Bitter Root, which the main range meets at the w. boundary, the Deer Lodge, Bear Paw, Big Horn, Powder River, and Gallatin ranges; the little Rockies, the Belt range s. of the Great Falls of the Missouri, the Highwood in the n., the low-lying Spoonbill, and many detached spurs and sloping buttes. The chief mountain region extends entirely across the w. end of the state, from n. to s., with a width of 175 m. The general elevation is much greater in the s. than in the n. Between the ranges are deep divides; rivers wind round the spurs; and cañons separate the buttes. In the s. part, near the Yellowstone river, the mountains rise 11,000 ft. above sea-level, covered with perpetual snow, and in the n., beyond the Missouri, the mountain-tops in early autumn are seen for many miles across the treeless plains, mingling the snowy purity of their tops with the blue of the sky. Toward the n. the ranges are so nearly continuous as to force the streams into long circuits, but in the s.w. the ranges are more broken, and afford numerous low passes and water-gaps. The chief peaks in M. are: Emigrant Peak 10,629 ft.; Mt. Powell 10,500; Ward's Peak 10,371; Mt. Cowan 10,351; Mt. Washburn 10,134; and Mt. Delano 10,200. Away from the region of mountains are found solitary peaks of basalt, tuff, and other volcanic rock, which appear of rocky solidity and hardness, but are in fact frequently soft enough to be cut with a knife. The scenery among the Rocky Mountains of M. is scarcely surpassed in the world. There are no wonders greater than those found in the region drained by the head-waters of the Missouri river. One of these is the Fire Hole basin, in the valley of the Madison, containing many hundreds of boiling springs and spouting geysers, which far exceed those of Iceland in size and grandeur. The Grand Geyser, the most magnificent in the world, throws a stream of hot water to the height

of 300 ft. The cañon of the Yellowstone is a great rent in the mountain range, with perpendicular basaltic walls 1,000 to 2,000 ft. high. For 25 m. along this chasm the river rushes with fearful velocity, making in one place a fall of 300 ft., one of the grandest cataracts on the globe. Out of this mountain region, partly in M. and partly in the n.w. corner of Wyoming, has been formed an immense 'National Park,' two-thirds the size of Connecticut, within the limits of which are not less than 10,000 geysers and boiling springs, many grand waterfalls, beautiful lakes, deep cañons, and mountain peaks.

The eastern two-thirds of M. is a generally monotonous expanse, broken only by the beds of the few streams which traverse it, and by a few small groups of hills. It extends through nine degrees of latitude in a gently uniform upward slope from e. to w., rising from 2,000 ft. above the sea at the e. boundary to 4,000 at the base of the Rocky Mountains. Except along the streams and upon the scattered groups of hills, no forest growth of any kind is found, and vegetation is limited to the bunch grasses, very valuable for grazing, and to artemisia and cacti. The grasses are most abundant and luxuriant near the mountains, where the rainfall is greatest.

In the mountain region of M. are the head-waters of the Missouri (Atlantic basin), and Clarke's fork of the Columbia (Pacific basin). The Missouri has three head-streams, the Jefferson, Madison, and Gallatin, which meet at the foot of the Gallatin valley, at a point known as 'the three forks of the Missouri.' From this point to its mouth, navigation is possible when the stream is not below its mean height, with the interruption made by the Great Falls between Helena and Fort Benton. From Fort Benton down, steam-boat navigation is good from April to September, and with improvements in the channel may be extended to the Great Falls. The other chief streams falling into the Missouri in M. are, on the n., the Sun, as high up as Great Falls, the Teton, just below Fort Benton, the Marias, not much lower down, but a stream of several branches, the Milk, a still greater stream with a long course in the n. middle part of the state, and the Poplar and Big Muddy, in the n.e. corner; and on the s. side of the Missouri such small streams as the Arrow and Judith, and one considerable river, the Musselshell, which drains a large area in the centre of the state and flows n. into the Missouri. The great Yellowstone river rises in the extreme s.w. part of M., and flows e. and n.e. to the Missouri, just over the boundary in N. Dak. It is navigable early in the season, and even as late as August, 300 m. above its mouth, and has tributaries on the s., the Big Horn, the Rosebud—where Custer's last battle with Sitting Bull took place—the Tongue, and the Powder. The Clarke's fork of the Columbia is formed by the union of the Flathead and Missoula rivers. The Missoula (treated sometimes as the lower reach of the Bitter Root) is formed from the Bitter

Root, Blackfoot, and some smaller streams, which gather the waters of the s.w. part of M. between the main divide of the Rocky Mountains and the Bitter Root range. It flows n.w., receiving on its course the Flathead, which comes from the n. through Flathead Lake, on the w. of the main range of the Rocky Mountains. Except Flathead and some small lakes in the s.w. part of the state, M. has no lakes. Flathead, 30 m. long and 14 wide, lies in the upper w. part of M., the country of the Flathead and Bannack Indians. It has dense forests of heavy timber, pine, tamarack, and fir, growing to the edge of the water, except on the n., which is open grassy prairie, with much tillable land. Timber is most abundant in the n.w. The trees most found throughout the state are pine, spruce, fir, cedar, and balsam; cottonwood, poplar, and willow. In sheltered glens among the mountains are found spots green with pine, cedar, and fir trees, and having a soil susceptible of high cultivation. Groves of cottonwood, ash, and hickory grow on the banks of the Missouri, and thickets of willows, in which the 'diamond willow' is found, are common. Grass, and wild flowers of rare beauty, abound in the valleys. Bunch grass covers all the plains and hillsides, giving rich grazing, not only in summer, but also through the open winters.

The valley lying n. and s. of Fort Owen, 80 m. long, 5 to 10 m. wide, and having an elevation above sea-level of 3,284 ft., has a soil of rich black loam, in which the cottonwood grows to the height of 70 ft., and pines to 150 ft. The Missoula valley, 15 m. wide for a length of 30 m., has a moderate climate and is well wooded. Prickly Pear valley, near Helena, is 5 to 15 m. wide and 20 m. long, with beautiful smooth meadows. The valley of the Teton, near Fort Benton, 2 to 6 m. wide, has bordering table-lands 75 ft. above it. Deer Lodge valley, at an elevation of 5,000 ft., is 40 m. long and about 12 m. wide, with a central stream its whole length, and mountain rivulets falling into it on either side. Sun River valley, with its swift stream, and timber of cottonwood and ash, is one to three m. wide, and for 25 m. beyond the crossing of the road from Helena to Fort Benton is 5 m. wide. The basin through which the Judith river flows is 50 m. wide and 80 m. long, and besides the main stream there are the w. and s. forks and Big Spring creek. In the area between these valleys are extensive cattle ranges, taken up by residents of the towns, and visited semi-annually.

Climate.—The isothermal line of Philadelphia is found at St. Paul, Minn., the Red River valley in Dak., and through M., giving this state a notable climate, in its effect on health, agriculture, commerce, and business interests, such as the grazing of cattle. The atmosphere is peculiarly dry, and is exceptionally invigorating and health-giving. It perfectly matures the wild grasses, and leaves them as ripe and sound as the best hay for the winter grazing of sheep and cattle, so that herding

reaches the perfection of ease and cheapness. The annual mean temperature ranges from 44° to 48°. Sudden and extreme changes are frequent; in every month of the year frosts and snow-storms are possible. A November sun sometimes shines with as much intensity as in July, and the traveller may set out for a journey of 150 m. in a linen coat and require a fur coat before he comes to his destination. The length of the summer days, the total amount of sunlight for a season, and the delicious life-giving winds far more than make up for the fierce storms, the winds laden with dry snow and sand which make the deadly blizzard, and the very infrequent continuance of heavy snow covering the ground. A peculiar wind, the 'chinook,' which has come over the Pacific from China and Japan—a strong and warm wind—leaves its moisture as it passes over the cold forest-clad mountains, and flows over M., into the Dakotas, with a dryness which in winter vaporizes and absorbs the snows, and a purity at all times singularly health-giving. Before the terrible cold and snow blockade for weeks together of 1881, the wild bunch, buffalo, and gama grasses were found ample food for stock throughout the year. Hay is made on the river bottom-lands and carried into the interior, but except at forts little is needed. The winter of 1886–7 was one of very exceptional cold and snow, following a summer in which drought greatly injured the grass-crop; and the result to the stock-grazing interest was a loss of cattle estimated at $25,000,000. In ordinary years the snows of winter do not, by thawing and freezing, become a solid mass covering the ground, but are very much blown from the ranges, or taken up by the dry air, leaving the ripe grass exposed for the cattle to feed upon.

The rainfall over most of the state does not vary much from the average at Fort Benton, 12·17 in. annually. In the n.w. region, the drainage area of the Clarke's fork, it is twice as much, giving enough for forests and for agriculture. From the mountain valley about the heads of the Missouri, across all the plains of the central and e. parts of the state, there is in general an insufficiency of rain, and trees are lacking.

Geology.—Azoic formations prevail in the w.; and eastward there appear first the Jurassic, next the carboniferous, and near the Dakota line the tertiary. Along the base of the mountains are beds of Jurassic and carboniferous rocks. Potsdam sandstone and brick-making clay are abundant, and some granite is found. Slate is found in large quantities in the placer-mining districts. In all sections the strata are much broken, and present a great variety of formations.

The plains which at the mouth of the Yellowstone are 2,010 ft. above sea-level rise gradually to 4,091 ft. at the base of the mountains, the elevation of the valleys varying from 3,000 to 5,000 ft. The cretaceous strata in the n. yield coal of the best quality, which is mined in the vicinity of Bannack, Helena, Virginia City, Deer Lodge, and Fort Benton; and there are evidences of its presence

Area in Square Miles, 146,080 | Population, 243,329.
Number of Counties, 27. | Capital of State, Helena.

on the Missouri, Musselshell, and Yellowstone. Petrifactions of all kinds—e.g., of snails, snakes, sea-serpents, buffaloes' bones, etc.—are found near the Missouri.

Mines and Mining.—Montana has been known principally on account of her mines, and leads in the production of copper and in the output of sapphires. The early history of the state is the search for gold, and many of her towns and cities are built in gulches where placer gold was mined. Virginia City and Helena are illustrations, the former being the oldest camp in the state. Although Butte is the greatest mining camp in the state, and indeed the greatest in the world, it is by no means the only place where mining is carried on. Mining for gold and silver has been carried on in the following counties: Beaverhead, Broadwater, Cascade, Choteau, Custer, Deer Lodge, Fergus, Flathead, Granite, Jefferson, Lewis and Clarke, Madison, Meagher, Missoula, Park, Ravalli and Silver Bow. Lewis and Clarke was the greatest producer. The annual output of gold is more than 200,000 fine ounces; of silver approximately 12,000,000 fine ounces throughout the state. During the 40 years following the discovery of gold over $1,000,000,000 in value of gold, silver, copper and lead have been taken from the streams and mountains of the state. While Butte is the great mining camp for copper, it is also mined in the counties of Beaverhead, Granite, Jefferson, Lewis and Clarke, Madison and Meagher. Lead was produced in all the counties mentioned except Madison, and in addition also in Broadwater, Cascade and Flathead. The total lead output is nearly 16,000,000 pounds. Montana is one of the richest coal states in the West, although much of it is undeveloped. Over 1,780,000 tons were mined in 1906 and new mines are being opened annually. The coal areas include about 13,000 sq.m., and the lignite area about 25,000. Not all of this territory contains coal, of course, but the deposits are found quite abundantly throughout the territory. The tests show the bituminous coal to be but little inferior to Pennsylvania bituminous coals. Bituminous coal or lignite has been found in every county of the state except Jefferson. The undeveloped coal industry will without doubt be a prominent factor in the future expansion of other industries of the state. In addition to its coal, the state has extensive beds of clay; the brick and clay product amount to $500,000. The output of building stone was about the same. Montana leads the Union in the production of sapphires, the actual mining of which began in 1891. Four mining regions may be mentioned: A belt 12 m. n.e. of Helena on the Missouri river; the Rock creek region, 30 m. w. of Anaconda; the Cottonwood creek field, 10 m. e. of Deer Lodge, and the Yogo mines in Fergus co., 13 m. w. of Utica. The annual output of sapphires in the state is between 450,000 and 500,000 kar[illegible]cluding those suitable for

cutting and those used for mechanical purposes. A lapidary at Helena employed 15 men, and it is asserted that finer work was done there than on stones sent to London.

Zoology.—The wild animals of Montana have been numerous and of great variety, but are disappearing as the country is settled. Great herds of deer, elk, mountain-sheep, antelope, were found in the mountains and on the foothills and plains of the mountain regions. The moose was frequently seen in the mountain gorges. Buffaloes, now no longer to be found, have been abundant at all points on the Missouri. Deer and antelope visit the rivers in the morning. Wolves are often seen on the prairies; grizzly bears, black bears, mountain lions, lynxes, and wild cats are plentiful in the forests; badgers, minks, otters, martens, and beavers are found; and in the streams trout, whitefish, and salmon.

Agriculture.—The state, as a whole, is not so available for farming as for mining and grazing, but within the last decade irrigation has done much toward remedying this condition, so that to-day large returns are being secured in wheat, oats, barley, corn, rye, potatoes, hay, and flaxseed, these being the chief crops of the state, although all kinds of vegetables and fruits are also grown with success. Circumstances peculiar to the climate have in some past seasons ruined the crops, but, on the other hand, the unsurpassed conditions so generally prevailing produce unrivaled products in many instances. Stock raising is pursued on an enormous scale in the state and represents the investment of large sums. The conditions for this are excellent, and good profits result. Altogether there are about 15,000 farms in M., comprising about 15,000,000 acres of which nearly four-fifths is unimproved land.

Manufactures.—There are more than 400 manufacturing establishments in the state, their aggregate productions being valued at over $75,000,000 a year. The predominating industry is the smelting of ores, the largest smelter in the world being located in M. at Anaconda, while the smelters of Butte, Helena, and Great Falls, the latter using water from the Missouri river, are also notable. Lumber and timber products are very valuable, as are malt liquors and cars and general shop construction. Woolen milling is a growing industry, while creameries and butter factories are likewise important. The biscuit and cracker industry is also profitable.

Many flouring mills have been established, utilizing almost the entire crop of wheat in the state, and consuming large quantities from the Dakotas. The large number of mills at Bonner, Hamilton, Somers, and other places have extensive factories in connection with the sawmills. They manufacture doors, sash, blinds, and other finishing stuffs. They also make large quantities

of furniture from native lumber. A woolen mill, in operation at Big Timber, established in 1901, consumes a considerable amount of the wool product.

Commerce and Transportation.—The chief shipments are of cattle, hides, pelts, furs, wool, and the products of the mines, the first and last of a bulk demanding great railroad facilities. The shipments of choice cattle from Ohio, Illinois, and Iowa, and other cattle-raising states are large, as are the shipments of merchandise of all kinds, which at first came by way of the Columbia and Missouri rivers and the hardest possible teaming over mountain roads, but at present, because of added railroad facilities, are easier of transportation, and so have greatly increased the volume of trade.

Altogether there are nearly 3,500 miles of railway in M. Two continental lines run through the state, besides many other large and important lines. Still the long distances make the passenger service inferior to that enjoyed in most other states. In the north is the Great Northern, with its many branch lines. Toward the southern part is the Northern Pacific, also with numerous short branches as feeders. The Burlington connects with the latter at Billings, running through trains over the Northern Pacific tracks to the coast. The Northern Pacific operates three daily passenger trains each way over most of the state—as far east as Billings, where one takes the Burlington route for Denver, Omaha, and St. Louis. The Great Northern operates two daily passenger trains each way over its road. The Oregon Short Line connects at Butte, making a gateway to Salt Lake and the south, east, and west. From one end of the state to the other on the Northern Pacific requires about 24 hours of travel, following for considerable distances the Missoula, Missouri, Gallatin, and Yellowstone rivers, with their varied scenery. The Great Northern skirts the banks of the Kootenai, the Flathead, the Milk, and the Missouri rivers, and gives a view of the great unoccupied field along the two latter.

Finance and Banking.—The total assessed valuation of property, including both personal and realty, is $309,673,699, the tax rate $2.50 per $1,000 and the bonded debt $339,000. There are about 40 national banks, nearly 50 State banks, and a very few private banks.

Education.—M. spends more than $2,000,000 a year in maintaining its public schools, in which there are over 75,000 pupils enrolled with about 2,000 teachers. There is also a public normal school, a university, a few private secondary schools, and schools of technology, and, although young among the states, M. ranks high in the efficiency of her school system. The State Agricultural College, the State School of Mines, and the State University, with its summer school, known as the University of Montana Biological Station, are all of

prepared to cross the Bitter-Root Mountains against the orders of the government. They crossed the mountains and passed up the Bitter-Root, pursued by soldiers under the command of General Gibbons. At the Big Horn a bloody and indecisive battle was fought. Chief Joseph passed through up the Madison, through the National Park, across the prairie to Snake creek, and was captured only a few miles from the Bear Paw Mountains—a trail of over 1,500 miles, more than half of which was a running battle.

The few settlers which Montana had before the discovery of gold 1861 were hunters, trappers, and missionaries. It was a favorite hunting-ground, and Fort Benton was a seat of the fur-trading interest. The early comers were, many of them, desperate characters, and social order was very uncertain until energetic Vigilance measures were adopted for suppressing disorder. The opening of railroads, the rapid growth of cities and towns, and the movement to become a state, have brought a new condition of things, fully representing order and progress of every kind as well as material prosperity. The constitutional convention to prepare for seeking admission to the Union sat 1884, Jan. 14—Feb. 9, and the constitution framed by it was ratified Nov. 4 by a popular vote of 15,506 against 4,266. Admission to the Union under this was not secured; but 1889, Feb. 22, an act of congress to admit Montana, North Dakota, South Dakota, and Washington was signed by President Cleveland; July 4 a duly called convention met at Helena and framed a state constitution; Oct. 1 this was adopted by popular vote, 24,676 against 2,274, and a state government was elected under it; and Nov. 8 President Harrison by proclamation declared Montana one of the states of the Union.

Government.—The executive of Montana consists of a governor, lieutenant-governor, secretary of state, attorney-general, treasurer, auditor, and superintendent of public instruction, chosen to serve for four years. The legislature consists of a senate whose members (26) are chosen for four years, and a house of representatives (72) to serve two years. The judiciary consists of a supreme court, of three judges elected by the people to serve six years, and of a supreme court clerk, district court judges, county attorneys, and justices of the peace elected by the people. Women who are tax-payers have equal right with men to vote on any matter submitted to tax-payers, and they are eligible to hold county, school, or school-district office, and may vote at any school-district election. The governors of Montana have been: 1864-5 Sidney Egerton; 1865-6 (acting) Francis Meagher; 1866-69 Green Clay-Smith; 1869-70 James M. Ashley; 1870-81 Benjamin F. Potts; 1882-3 J. Schuyler Crosby; 1884-5 B. Platt Carpenter; 1886-7 S. T. Hauser; 1888-9 Preston H. Leslie; 1889-93 Joseph K. Toole; 1893-97 John E. Rickards;

1897-1901 Robert B. Smith; 1901-08 Joseph K. Toole; 1908— Edwin L. Norris.

Population.—(1870) 20,595; (1880) 39,159, white 35,385, col. 3,774, incl. 1,765 Chin. and 1,663 Ind.; (1886) 120,000; (1887) 130,000; (1890) 132,159; (1900) 243,329; (1910) 376,053.

Bibliography.—The following works may be consulted for further information relative to the history and development of the state: Bancroft, *History of the Northwest Coast* (1886); *Idaho and Montana* (1890); Biddle, *History of the Expedition under the Command of Lewis and Clarke* (1842); Davies, *Cities of Montana* (1896); Lewis and Clarke, *Travels from St. Louis by Way of Missouri and Columbia Rivers to the Paeifie Ocean* (1804-6); Palladino, *Indians and Whites in the Northwest; or, a History of Catholicity in Montana* (1895); Roosevelt, *Ranch Life and the Hunting Trail* (1888); *Geological Survey of the Territory; Preliminary Report of Montana and portions of Adjaeent Territories* (1871); *Wonderland,* issued annually by N. P. railway, St. Paul; *Rocky Mountain Magazine.* Publications from the agricultural experiment stations at Bozeman, from the University at Missoula, and by the various state officers. Annual report, Bureau of Agriculture, Labor and Industry, Helena.

MONTANA, UNIVERSITY OF: the state university opened in 1895, at Missoula, Mont. It was endowed by a grant of land from congress in 1892. Courses are offered in the classics, philosophy, general science, and applied science; there is also provision for graduate work in these courses; a preparatory department is maintained, and there is a summer school of science. The degrees conferred are A.B. and B.S., and the corresponding masters' degrees. Women are admitted to the university. The income is derived mainly from the proceeds of the sale or rental of the land given by congress; state appropriations are also made. In 1907 the students numbered 392, the faculty 26.

MONTANIC, a. *mŏn-tăn'ĭk* [L. *montānus,* dwelling upon the mountains—from *mons,* a mountain]: pertaining to or consisting of mountains.

MONTANIST, n. *mŏn'tăn-ĭst:* a follower of *Montanus* (q.v.), a Phrygian heretic of the 2d century. MON'TANIS'TIC, a. *-ĭs'tĭk,* pertaining to the doctrines of Montanus. MON'TANISM, n. *-ĭzm,* the tenets of Montanus.

MONTANT, n. *mŏn'tănt* [F. *montant*—from *monter,* to mount—from L. *mons,* a mountain]: a term in fencing; any upright piece in framework.

MONTANUS, *mŏn-tā'nŭs:* a heresiarch in the early Christian Church: a Phrygian by birth, who appeared about 160 at Ardabar, on the confines of Phrygia and Mysia. He was brought up in heathenism, but embraced Christianity with all the fanatical enthusiasm for

which his countrymen were noted.—Montanus's *theory* was the exact opposite of that of the Gnostic sects; yet, *in practice*, it led to a similar exclusiveness and sectarianism. He believed in the constancy of supranatural phenomena *within* the church: the miraculous element, particularly the prophetic ecstasy, was not removed; on the contrary, the necessity for it was greater than ever. He considered those only to be true or perfect Christians who possessed the inward prophetic illumination of the Holy Spirit—they were the true church; and the more highly gifted were to be regarded as the genuine successors of the apostles, in preference to the mere outwardly consecrated bishops. Thus, they formed a religious aristocracy, as arrogant as the Gnostics; the difference between the two being, that the Montanists prided themselves on a kind of inflamed inspiration, and the Gnostics on a calm and serene illumination of the reason. Neither party wished to recede from the Cath. Church, but rather to exist as an esoteric body within its pale. It was persecution, caused, no doubt, by their own insolent obstinacy, that forced them into a sectarian organization. Montanus did not meddle directly with the creed of the church; he was not a thinker, nor a man of much importance intellectually. His efforts were confined to stirring up the Christians generally to what he deemed fresh religious life—to a belief in a fresh outpouring of the Holy Spirit. At first Montanus contented himself with predicting fresh persecutions, exhorting men to greater strictness and holiness of life, and announcing judgments to come upon the persecutors; but his idea of his own mission afterward became more exalted, and he claimed to be in a very special sense a prophet of God—the organ chosen by the Holy Spirit to purify, enlighten, and advance the church. Among the things on which the Montanists laid stress was an ascetic mode of life, scorn of persecution, and love of martyrdom; connected with these, and, indeed, flowing from them, was an aversion to second marriages and to the restoration of the LAPSED (q.v.). Like other enthusiasts, they were firm believers in the near approach of the Millennium (q.v.) and in the visible bodily advent of Christ. Two 'prophetesses,' Priscilla and Maximilla, were associated with Montanus in his work. A decree for the expulsion of Montanus and his followers from the communion of the Cath. Church was issued by Eleutherus, bishop of Rome. The Montanists at once proceeded to organize themselves as a distinct sect. They found a singularly able apologist in Tertullian (who became a Montanist about 200), and they continued to exist till the 6th century.

MONTA'NUS, ARIAS. See ARIAS MONTANUS.

MONTARGIS, *mōng-târ-zhē'* or *-zhēs':* town of France, dept. of Loiret, at the junction of the canals of Orleans and Briare with that of Loing, 40 m. e.n.e. of the city of

Orleans. Montargis has some cloth and leather manufactures, and considerable trade in corn, cattle, etc. In its vicinity is the extensive forest of Montargis. Pop. 12,000.

MONTAUBAN, *mōng-tō-bŏng'* (Lat. *Mons Albanus*): town of France, cap. of the dept. of Tarn-et-Garonne; in a rich and beautiful country, on a plateau between the rivers Tarn and Tescou, 32 m. n. of Toulouse. It is the seat of a bishop, and has a fine cathedral in the Italian style, finished 1739, on the site of an older monastery, the *Mons Aureolus* (Golden Hill). Montauban is a well-built, handsome town: the houses are mostly of brick. Besides having considerable manufactures, it has great trade in wine, grain, leather, etc.—Montauban was founded 1144 by Count Alphonse of Toulouse, became the seat of a bishop 1317, embraced the Reformation 1572, and suffered severely in the civil wars that ensued. It has acquired historical celebrity as the great stronghold of the Huguenots. Protestantism still is strong, and maintains both an academy and a theological college. Pop. (1901) 30,506.

MONTAUK POINT, *mŏn-tawk':* elevated headland, the extreme eastern point of Long Island, and belonging to East Hampton township, Suffolk county, N. Y. It was the home of the Montauks, a fierce tribe of Indians, about a dozen of whose descendants remain. Montauk Point is the end of a fine high grassy plateau furnishing pasturage for thousands of cattle. On a bluff about 70 feet above the sea, the government has erected a stone light-house 110 feet high, which flashes a white light once in two minutes and can be seen 36 miles at sea. This was the first Fresnel light used in America.

MONTBÉLIARD, *mōng-bā-lyâr'* (Ger. *Mömpelgard*): town of France, dept. of Doubs, 36 m. n.e. of Besançon. It lies in a valley between the Vosges and Jura Mountains, is surmounted by an old chateau, now used as a prison, and has manufactures of cotton goods, hosiery, and silks. Clocks, watches, and agricultural implements also are made. Pop. about 11,000.

MONT BLANC, *mōng blŏng':* highest mountain in Europe; according to the latest measurements, 15,781 ft. above the level of the Mediterranean Sea; one of the Graian Alps. It is in the dept. of Haute-Savoie, France, close to the Italian frontier, 37 m. s. of the e. end of the Lake of Geneva. The vales of Chamouni and Montjoie lie on the w., and those of Ferret and Allée Blanche on the e. side of it. The waters from its w. slopes are drained off to the Arve, thence to the Rhone; while those which rise on the e. are feeders of the Dora Baltea, tributary of the Po. It has 3 snow-clad peaks and 36 glaciers, of which 16 are on the north and 20 on the south side. The highest summit is a narrow ridge 50

yards by 16, called *La Bosse du Dromedaire*, covered with firm snow, and very steep toward the north. In 1760, Saussure offered a prize for the discovery of a practicable route to the summit of M. B., which was gained 1786, June, by Jacques Balmat, a guide. Saussure himself ascended the mountain the following year; and the same feat has since been performed by many, especially since Albert Smith published the well-known pictorial and dramatic description of his ascent in 1851.

MONTBRISON, *mōng-brē-zōng′:* town of France, cap. of the dept. of Loire, 37 m. s.w. of Lyon, at the base of a lofty rock. Pop. 6,235.

MONTCALM DE ST. VÉRAN, *mŏnt-kâm′*, F. *mōng-kâlm′ dĕh săng vā-rŏng′*, Louis Joseph, Marquis de: 1712, Feb. 28—1759, Sep. 14; b. near Nîmes, France. He was a soldier from the age of 14 years, when he entered the French army; was made capt. at 18; served with distinction in Italy 1734; in Germany during the war for the Austrian succession; and again in Italy, where he was wounded at Piacenza 1746, and was promoted col. At the opening of the French and Indian war in America, he was sent to Canada 1756, May, to take command of the French troops there. He took Fort Ontario at Oswego, and Fort William Henry on Lake George, from the English. In 1758 he occupied and strengthened Ft. Ticonderoga (Carillon), and awaited, with his 3,600 Canadian volunteers, the attack of Gen. Abercrombie at the head of 15,000 British. In a fierce battle, July 8, the latter were forced to retreat. Lack of provisions and ammunition, and improper support from the home govt., obliged him 1759 to withdraw his forces to the defense of Quebec, on which depended the French dominion in America, and which was threatened by Gen. Wolfe with an army of 8,000 men and a fleet on the St. Lawrence. M. concentrated his force on the Montmorency, and when attacked by Wolfe, July 31, he promptly drove him back with heavy loss; for 6 weeks afterward the British besieged him in vain. Then Wolfe conceived and carried out the bold plan of scaling the cliffs, from the river, above Quebec. This he did in the night of Sep. 12, and the next morning revealed his entire army drawn up on the plains of Abraham, in the rear of the French. M. promptly prepared to meet the unexpected foe. At 10 A.M. the battle opened; M. led his men in person; but the deadly fire of the British threw them into confusion; then the British charged, driving their opponents in every direction. M., though wounded, bravely tried to rally some of his volunteers, when a ball struck him, inflicting a mortal wound, almost at the same time when Wolfe too received his death-blow and was carried off the field. M. died the next morning, and several days afterward Quebec surrendered, and Canada was lost to France. A monument was erected in Quebec 1827 to the memory jointly of M. and Wolfe.

MONT CENIS, *mōng sch-nē′:* see Cenis, Mont: Tunnel.

MONTCLAIR, *mŏnt-klâr′:* town and tp. in Essex co., N. J.; on the Delaware Lackawanna and Western and the New York Lake Erie and Western railroads; 5 m. n. of Newark, 13 m. n.n.w. of New York. It is on the e. slope of the Orange Mountains, 650 ft. above tide-water, and commands magnificent views of the country extending to New York city and bay. It has been built up mainly by New York business men; is provided with road macadamized and gravelled roads extending through its suburbs; has several superior private and public schools, 8 churches, public library, and superb residences; and is a charming place of suburban residence. Watchung, Upper Montclair, and Montclair Heights are extensions of M. proper, and all are supplied with excellent water. Among the attractions are splendid drives to the famous Eagle Rock, Camp Washington, Passaic Falls, Little Falls, and Verona Lake. Pop. (1880) 5,147; (1901) 8,656: (1900) 13,962; (1910) 21,550.

MONT-DE-MARSAN, *mōng-dĕh-mâr-sŏng′:* town of France, cap. of the dept. of Landes, 65 m. s. of Bordeaux. Pop. about 10,700.

MONT DE PIÉTÉ, n. *mōng′ dĕ pē′ā-tā′* [F. mount of piety: It. *monte di pieta*]: charitable institution, frequently managed by the govt., the object of which is to lend money to the very poor at moderate interest. It had its origin at the close of the mediæval period, when all such transactions were in the hands of usurers, to whom the necessities of the poor were an inducement to the most oppressive extortion. Its originator was Francisco de Viterbo, a Minorite friar at Padua. He appears to have procured the sanction of the pope's bull for the founding of the earliest of these charitable banks at Padua 1491, which was so successful as to lead, according to contemporary writers, to the closing of the Jewish banks in that city. The first opened at Rome was under Leo X.; and the Roman Monti di Pieta are confessed to have been at all times the most successful and the best managed in Italy. The institution extended to Florence, Milan, Naples, and other cities. The principle of all was to advance small sums on the security of pledges, but at a rate of interest barely sufficient to cover the working expenses. Should any surplus remain, it was to be expended for charitable purposes. The mont of Milan, nearly 500 years old, formed by union of 36 private concerns, had (1883) a capital of 671,000 Austrian livres. The Mont de Piété system was introduced into Spain, France, Belgium, Germany, the Netherlands, and Russia. In 1873 there were in France 46 Monts de Piété, making yearly loans of 60,000 francs: the most important are at Paris, Lyons, and Marseilles. The M. de P. formed the model of the loan fund board of Ireland. The system has never been successfully introduced into Britain, and is not known to have been attempted in the United States. See PAWNBROKING.

MONTE, n. *mŏn′tā* [Sp. the stock of cards that remains after each player has received his share; L. *mons*, a mountain]: a gambling game played with cards or dice. MON′TE-BANK, n., a gambling-house where monte is played.

MONTEBELLO CASTEGGIO, *mōn-tā-bĕl′lō kâs-tĕd′jo:* village of n. Italy, province of Pavia, 23 m. e.n.e. of Alessandria; in a plain on the banks of the torrent Schizzola. Here the Austrians were defeated by a French army under Gen. Lannes, after a desperate conflict, 1800, June 9. The title Duke of Montebello was conferred on the victorious French gen. five years later. 1859, May, the Austrians were again defeated here by the united armies of the French and Piedmontese.

MONTE CARLO, *mōn′tā kâr′lō:* small town in the territory of Monaco (q.v.), close to the town of Monaco; notorious for its gaming-tables.

MONTE CASI′NO: see CASINO, MONTE.

MONTE-CATINI, *mōn-tā-kâ-tē′nē:* village of Tuscany, on a spur of the Apennines, 29 m. w. of Florence. In the vicinity are the famous mineral springs of M.-C., in high repute for curative properties, especially in diseases of the liver and digestion. Excellent accommodation can be had by visitors both in private establishments and those under govt. direction.

MONTE CHIARO, *mōn′tā kē-â′rō:* town of n. Italy, province of Brescia, on a height on the left bank of the Chiese, in the centre of an amphitheatre of hills. The chief manufacture is silk. In 1796, the Austrians were defeated here by a French army.—Pop. 6,933.

MONTE CHRISTO, *mōn′tā krēs′tō:* small island belonging to Italy, 26 m. s. of Elba. It consists of a mountain of granite 1,983 ft. above sea-level, and is uninhabited except by wild goats and other animals. It is inaccessible except by one narrow landing-place. M. C. has given name to Dumas's well-known novel.

MONTECUCULI, *mon-tā-kō′kô-lē*, RAIMONDO, Count of, Prince of the Austrian empire, and Duke of Melfi: 1608–1680, Oct. 16; b. at the castle of Montecuculi, Modena. He entered the Austrian artillery as a volunteer under his uncle, Ernesto, Count Montecuculi, 1627. During the Thirty Years' War he found many opportunities of distinguishing himself, received rapid promotion, and was employed in various services, military and diplomatic. In 1657, he was sent to support the King of Poland, John Casimir, against the Swedes and Rákóczy, which he did with great effect, compelling Rákóczy to make peace with Poland, and to break his alliance with the Swedes. In the following year, he was made a field-marshal, and was sent to aid the Danes against the Swedes, in which also he was eminently successful. In 1660, he commanded the army sent to oppose the Turks, who had broken into Transylvania, and skilfully kept them in check till the arrival of the French, with whose

assistance he won the great battle of St. Gotthard, on the banks of the Raab, 1664, Aug. 1—the first decided triumph of European tactics and discipline over the mere numbers and daring of the Ottoman hosts. When the war broke out between France and Holland, in which the emperor took part with Holland, M. received the command of the imperial army 1672. He took Bonn, and, notwithstanding the endeavors of Turenne to prevent it, effected a junction with the Prince of Orange. In 1675, he was opposed to Turenne on the Rhine, and they spent four months in manœuvres in which neither could gain any advantage. After this campaign, M. spent the remainder of his days at the imperial court and in the society of learned men. He was himself a man of learning and various accomplishments, and has left works on the art of war, on the Turkish war, and on the war of 1664, also sonnets. Emperor Leopold made him a prince of the empire, and the King of Naples bestowed on him the duchy of Melfi. He lost his life by the fall of a beam as he was entering the castle at Lintz with the imperial court. His writings were published in the original Italian by Ugo Foscolo (2 vols. Milan 1807), and by J. Grassi (2 vols. Turin 1821). See Campori, *M., la sua Famiglia e i suoi Tempi* (1877).

MONTEFIORE, *mon-tā-fē-ō′rā*, Sir Moses: renowned Jewish philanthropist: 1784, Oct. 24—1885, July 29; b. London; descendant of a wealthy family of bankers. He was prominent in the struggle for removing the civil disabilities of English Jews (see Jews). He was for a time high sheriff of Kent; and after long exclusion and repeated re-election, was legally admitted as sheriff of London. While acting in this capacity he was knighted 1837, and afterward raised to a baronetcy 1846, in recognition of his meritorious public services. He distinguished himself by his practical sympathy with his oppressed countrymen in various parts of the East, chiefly in Poland, Morocco, and Turkey; and at different times he undertook missions on their behalf, visiting Damascus 1840, Roumania 1867, and Jerusalem 1875. He was presented with the freedom of the city of London 1873. In memory of his wife he endowed a Jewish college at Ramsgate 1867. In his 100th year he was still hale and well, but died in the following year. He had a clear and active mind, with great practical wisdom and executive force. His high integrity, his devout but broadly tolerant religious spirit, and his genial disposition, were as notable as was his public beneficence.

MONTEGO BAY, *mŏn-tē′gō:* small but flourishing seaport on the n. coast of the island of Jamaica, 17 m. w. of Falmouth. It has a harbor protected by a breakwater, is defended by a battery, and carries on a general trade of some importance. More than 100 vessels annually enter and clear the port. Pop. variously stated, 4,000 to 5,000.

MONTEM, n. *mŏn'tĕm* [L. *mons* or *montem*, a mountain]: ancient custom among the scholars of Eton School of making a triennial procession on Whit-Tuesday, to a certain mound (*ad Montem*) known as the Salt Hill, near the Bath Road, and which was doubtless so called because certain of the boys levied tribute (for *salt*, as the phrase went) from every person present, and even from any chance passer. These juvenile tax-gatherers were attired in fancy dresses of silk. The king and queen, besides many members of the nobility, frequently honored the procession with their presence; and on such occasions, as much as £1,000 has been collected, which was given to the senior scholar to support him at Cambridge. The origin of the custom is unknown. It was discontinued 1847.

MONTENEGRO, *mŏn-tā-nā'grō* (often pronounced and sometimes written MONTENERO; Italian translation of the native name CZERNAGORA, 'Black Mountain'): small but independent and recently extended principality between Bosnia and Albania. Till 1878 it had an area estimated from 1,669 to 1,796 sq. m., and was separated from the Adriatic by a narrow strip of foreign territory; but the Berlin Conference assigned to M. the port and dist. of Antivari, while closing it against the war-ships of all nations. Toward the end of 1880, the port and dist. of Dulcigno (q.v.), heretofore Albanian, became Montenegrin. The latter place Turkey agreed to cede instead of an inland district indicated by the Berlin Conference; but the persistent delay of the Porte to transfer Dulcigno led to strong pressure and a naval demonstration by the western powers. Area of M. about 3,680 sq. m.; pop. about 228,000.

The country, traversed by branches of the Dinaric Alps, is very mountainous, the highest points being Dormitor in the n. (8,146 ft.), and Kom Kutchi in the e. (8,031). In the e. and s., the hills are partly clad with forests. But the higher ridges and plateaus are bare of vegetation; and being generally covered with loose masses of rock, give to M. an aspect of peculiar sterility and desolation. Yet the valleys are highly fertile; those of the Moratscha and Zeta, with the low land on the Lake of Scutari (into which the chief streams of M. debouch), form the granary of the land. The climate of the hill country, which is M. proper, is ungenial; that of the great valley and its connected region is delightful. The fisheries of the lake are productive. Agriculture is carried on wherever practicable. The exports, which may be valued at about $1,000,000, consist mainly of hides, wool, sheep, smoked mutton and bacon, sumach, cheese, and fruit; but as there are hardly any roads other than mere tracks, exports and imports alike have to be conveyed on the backs of mules, or of porters, usually women. The cap. of M., Cettigne or Cetinji, is a village of 2,514 inhabitants. The chief towns, mostly in the newly acquired territory, are Antivari (2,514), Podgoritza (6,534), Dulcigno (5,000), Niksik (3,500), Danilograd (1,500), Spuz, Zabliak, Kolasin.

MONTENEGRO.

The Montenegrins or Zrnagorzes are Slavs of the Servian stock, and constitute almost the whole population of the country, the exception being some Albanians and others in the new territory. The natives are handsome, athletic, and very hardy. They have many noble characteristics; their morals are pure, and their family affection strong. They are brave and patriotic, but somewhat reckless, passionate, and fierce. Their modes of warfare, formerly savage, have yielded to civilized methods. Their clan system lends itself to the perpetuation of close alliances and bitter feuds, and the hereditary obligation to avenge blood is fully recognized.

The constitution of the country is usually called limited monarchy; probably it would be safer to speak of it as an absolute hereditary monarchy, in which the council of state and the national assembly have considerable influence on the decisions of the prince. The head of the govt. 1516–1851 was the *Vladika* or prince-bishop, who, besides his proper office as ecclesiastical superior, exercised at the same time those of chief ruler, lawgiver, judge, and military leader. In 1851, the two offices were disjoined, and the vladika was restricted to his ecclesiastical office, while the cares of government were left to the *Gospodar* (hospodar) or prince. Since 1879 the state council consists of eight members, of whom half are appointed by the prince. The country is now divided into 80 districts and four military commands. Besides this, there exist the time-honored patriarchal institutions. An 'elder' presides over each village community; these small communities constitute 40 or more tribes or clans, each of which has again an 'elder' at its head; and groups of allied clans choose a *knjas*. All these various local dignitaries come together to form the *Skupschtina* or national assembly.

The language of the Montenegrins is a very pure dialect of the Servo-Illyrian Slavonic. With the exception of 7,000 Rom. Catholics and 3,000 Mohammedans in the new territory, the Montenegrins belong to the orthodox Greek Church. There are about 2,000 Montenegrins scattered in Austria, Turkey, and Russia; besides small Montenegrin colonies in Alexandria and San Francisco.

The public income amounts to about $1,500,000, and exceeds the expenditure. The public debt was paid off by Russia 1876. The prince's civil list includes $1,750 from home sources, $7,000 from Russia, and $10,000 from Austria. Except the body-guard of the prince, there is no standing army. But as all the inhabitants are trained to arms, they form a permanent militia, and are easily transformed into an army of nearly 30,000 excellent soldiers. According to a plan of reorganization contemplated 1880, there would be a first 'ban' of 26,000 men, and a second 'ban' or reserve of 8,400.

Consult Andric, *Gesch. des Fürstenthumes M.* (1853); Dutschitsch, *Zrna Gora* (1874); Gopcevic, *M. et les Montenegrins* (1877); Denton, *M.* (1877).

History.—M. belonged in the middle ages to the great

Servian kingdom, but after the dismemberment of the latter, and its conquest by the Turks at the battle of Kossovo (1389), the Montenegrins, under their prince, who was of the royal blood of Servia, maintained their independence, though compelled to relinquish the level tracts about Scutari, with their chief fortress of Zabliak, and confine themselves to the mountains (1485). In 1516, their last secular prince resigned his office, and transferred the govt. to the vladika. The Porte continued to assert its claim to M., and included it in the pashalik of Scutari; but the country was not conquered till 1714, and on the withdrawal of the Turks soon afterward, it resumed its independence. In 1710, they had sought and obtained the protection of Russia, the czar agreeing to grant an annual subsidy on condition of their harassing the Turks by inroads, and this compact has, down to the present time, been faithfully observed by both parties. Another part of the agreement was, that the archbishop or vladika was to be consecrated by the czar. In 1796, the prince-bishop, Pietro I., defeated the Pasha of Scutari, who had invaded M., with the loss of 30,000 men; and for the next quarter-century we hear no more of Turkish invasions. The Montenegrins rendered important aid to Russia 1803 against the French in Dalmatia, and took a prominent part in the attack on Ragusa, the capture of Curzola, and other achievements. Pietro II. (ruled 1830–51) made great efforts to civilize his people and improve their condition. He established the senate, introduced schools, and endeavored, though unsuccessfully, to put an end to internal feuds and predatory expeditions into the neighboring provinces. Some Turkish districts having joined M., the Turks attacked the latter 1832, but were repulsed. A dispute with Austria regarding the boundary resulted in a war, which was terminated by treaty 1840. In 1851, the last prince-bishop died, and his successor, Danilo I., separated the religious from the secular supremacy, retaining the latter under the title of Gospodar. This step caused Czar Nicholas to withdraw his subsidy (which was renewed, and the arrears paid, by Czar Alexander II.), and the imposition of taxes thus rendered necessary caused great confusion. This was taken advantage of by the Turks, who, under Omar Pasha, invaded the country; but the intervention of the Great Powers compelled a treaty 1853, Feb. 15. Danilo went in vain to the Paris conference 1857, seeking the recognition of M. as independent. In 1860, the Montenegrins excited an insurrection against the Turkish rule in the Herzegovina, which was soon suppressed, and in return they were so hard pressed by the Turks, that they were glad to agree to a treaty (1862), by which the sovereignty of the Sublime Porte over M. was recognized. Fresh complications caused M. to declare war against Turkey 1875, Jan., but a compromise was effected. M., however, supported the insurrection against Turkey that broke out in the Herzegovina a little later, and was again at war 1876, July.

The Montenegrins co-operated with the Russians against their hereditary enemy during the war of 1877-8; and the Berlin Conference (1878) recognized the independence of Montenegro, and agreed to an important extension of Montenegrin territory.

MONTEREY, *mŏn-tĕ-rā':* Cal., city in Monterey county: on Monterey Bay, and on the Southern Pacific railroad; about 100 miles south by east of San Francisco. The first settlements were made by the Spaniards, and in 1770 they founded here the mission of St. Charles Borromeo of Monterey. It was the capital of the province from 1840 to 1845. Commodore Jones of the United States navy captured the place in 1842, and held it for one day, under the erroneous impression that war had been declared against Mexico. Monterey was the capital of the military government of California in 1847. In 1849 the State Constitutional Convention was held here, and in 1850 the place was incorporated. The city is located in a rich grain and fruit section. Fishing and stock-raising are prominent industries. It is a favorite resort for summer and winter. Some of the noted buildings are Colton Hall, in which the first State Constitutional Convention met, the old custom-house, and the San Carlos Mission. The city is the seat of San Carlos Academy, and it has good public and parish schools and a public library. Pop. (1900) 1,748; (1910) 4,923.

MONTEREY: Mexico, capital of the state of Nuevo Leon; situated at the foot of the Sierra Madre Mountains; 168 miles from the Texas frontier. The most notable industry is an iron and steel mill. Over $25,000,000 are represented by the manufacturing and industrial enterprises of the city. There are two local financial institutions, the Bank of Nuevo Leon, with a capital of $2,000,000, and the Mercantile Bank, with a capital of $2,500,000. The National Bank has a branch here and the Bank of London and Mexico, an agency. The principal educational institutions are the School of Jurisprudence, Normal School for males, Normal School for females and the Academy of Drawing. There are a Natural History Museum and a public library with 4,500 volumes. The principal buildings of the city are the Juarez Theatre, the Cathedral and the churches of San Francisco and the Purisima. The streets are well paved. Four miles distant are the Topo Chico Hot Springs, the hourly output of which is 68,000 gallons. It was founded by the Spaniards in 1585 as Ciudad de Leon, but renamed Metropolitan City of Our Lady of Monterey in 1596. The city was besieged in 1846 by Gen. Taylor and compelled to capitulate. Pop. over 60,000.

The BATTLE OF MONTEREY, 1846, Sep. 19-24, was fought between 6,600 American troops under Gen. Zachary Taylor, and 10,000 Mexicans commanded by Gen. Ampudia. Regarding Monterey as the key to the n. provinces of

Mexico, Gen. Taylor marched s. from Matamoras, where he had been reinforced, and arrived before M. Sep. 9. Finding the city strongly fortified, Taylor began his attack Sep. 19, by opening a heavy bombardment upon it from his batteries; followed by a successful assault on the lower part of the city by Gen. Quitman's brigade, at the same time that a regt. under Gen. Butler effected an entrance at another side. The Mexicans made a stubborn defense. Each strongly built house had to be separately assailed, and its occupants driven out, so that a running fight was kept up from street to street. On the second day Gen. Worth succeeded in storming the bishop's palace, occupying the hill w. of the city, and deemed almost impregnable. The Mexicans were finally driven into the main plaza of the city on the 23d, but did not surrender until the next day. The American loss was 120 killed and 368 wounded; that of the Mexicans is unknown. It was the first battle of the war won by the Americans, and greatly encouraged them.

MONTERO, n. *mŏn-tā′rō* [Sp. *montera*—from *montero*, a huntsman—from *monte*, a mountain]: a kind of cap, properly a huntsman's cap, having a spherical crown, and a flap which could be drawn down over the ears.

MONTE ROSA, *mōn′tā rō′sâ* (*Mons Sylvius* of the ancients): highest mountain in Europe after Mont Blanc. It is in the angle where the w. end of the Pennine meets the Lepontic Alps, and separates the canton of Valais from Italy. The n. portion of the mountain is highest, and forms nine peaks, the highest of which is forked and precipitous, 15,210 ft. above sea-level. Many attempts were made to ascend this peak, but none were successful till 1855. The mountain appears to consist of mica-slate, in some places alternating with gneiss. It is rich in metallic ores, and several mines of gold, copper, and iron are worked. The highest mine is between 10,000 and 11,000 ft. above sea-level, and in the region of perpetual snow. Rye ripens to an elevation of 6,000 ft.; and the vine is found as far up as 3,200 ft.; but there is a difference of nearly 1,000 ft. in the altitude of the corresponding vegetation on the n. and s. sides.

MONTE SAN GIULIANO, *mōn′tā sân jô-lē-â′nō:* town of the island of Sicily, province of Trapani, on a high mountain 4 m. e.n.e. of the town of Trapani. On the mountain (anciently *Eryx*) are the remains of a famous temple of Venus. Pop. 3,250.

MONTE SANT' ANGELO, *mōn′tā sânt ân′jā-lō:* city of s. Italy, province of Foggia (formerly Capitanata), 28 m. n.e. of Foggia; on one of the Gargano group of hills, at a height of 2,790 ft., and has numerous fine churches. It is famed for exquisite honey, gathered from the odoriferous alpine plants of the mountain. Pop. 14,936.

MONTE SARCHIO, *mōn′tā sâr′kē-ō:* town of s. Italy, province of Benevento, 13 m. n.w. of Avellino, on the torrent Correo. Pop. 5,600.

MONTESQUIEU, *mŏn-tĕs-kū'*, F. *mōng-tĕs-ke-ĕh'*, CHARLES LOUIS DE SECONDAT (Baron DE LA BRÈDE ET DE MONTESQUIEU): philosophical historian: 1689, Jan.—1755, Feb. 10; b. at his father's château of La Brède near Bordeaux; descended from one of the most distinguished families of Guienne. In his youth he was a hard student of jurisprudence, literature, and philosophy. His love of the classical authors was so great, that at the age of 20 he composed a work intended to show that they did not deserve eternal damnation for being pagans. In 1714, he was appointed a councilor of the parliament of Bordeaux, and two years later, pres. of the parliament. His first (published) work was his famous *Lettres Persanes* (Par. 1721), in which, in the character of a Persian, he ridicules with exquisite humor, and clear, sharp criticism, the religious, political, social, and literary life of his countrymen. Although he did not spare the Academy in these *Lettrès*, he was admitted a member of it 1728, and would have been admitted sooner, if Cardinal Fleury had not objected on the ground of his jests against religion. In 1726, M. resigned his office in the parliament of Bordeaux, and spent some years in foreign countries. In England, he spent two years, during which he was much in the company of Lord Chesterfield, and was treated with the greatest respect by the most distinguished personages. After his return to Brède, he published *Considérations sur les Causes de la Grandeur et de la Décadence des Romains* (Par. 1734), a masterly view of Roman history, expressed in a sententious, oracular, and vigorous style—the first important essay in the philosophy of history. It was followed, after a long interval, by his *Dialogues de Sylla et de Lysimaque* (Par. 1748), published under an assumed name, in which the motives and feelings of a despot are skilfully analyzed. In the same year appeared his great work, on which he had been engaged for 20 years, the *Esprit des Lois* (2 vols. Geneva 1748), aimed to exhibit the relation between the laws of different countries and their local and social circumstances. It was immensely popular. No fewer than 22 editions were published in 18 months, and it was translated into various European languages. The *Esprit des Lois* is a wonderfully good book, considering the age in which it appeared; by an excellent critic it has been declared 'one of the most important books ever written.' Certainly it is in its department one of the wisest. Without adopting Voltaire's hyper-eulogistic criticism, that 'when the human race had lost their charters, Montesquieu rediscovered and restored them,' it may be said that it was the first work in which the questions of civil liberty were ever treated in an enlightened and systematic manner, and to M., more than to any other man, is it owing that the science of politics has become a favorite subject of study with the educated public. It is interesting to note that M., before publishing the work, submitted it to a committee of his literary friends, six in number, some of much eminence, who unanimously, though with differing

reasons, advised against its publication. It has been pointed out that the literary method as well as the thought of the *Esprit des Lois* is accordant more with English than with French standards: this may account for the fact that its popularity has always been greater in England and the United States than in M.'s own country. M. died at Paris. Of numerous editions of his works, by far the best is that by Édouard Laboulaye (7 vols. Par. 1875–79). See his Life by Louis Vian (2d ed. Par. 1879), and Dangeau's *M., Bibliographie des ses Œuvres* (Par. 1874).

MONTEVIDEO, *mŏn-tē-vĭd′ē-ō*, Sp. *mōn′tā-vē-tha′o*, SAN FELIPE Y SANTIAGO DE: city, capital of the republic of Uruguay, S. America; on the n. shore of the estuary of the Rio de la Plata (here 65 m. wide), and 132 m. e. by s. from Buenos Ayres, with which it has daily communication by an excellent line of steam-vessels. It stands on a small peninsula, and is surrounded by a wall and fortifications. The houses are mostly of one story, with flat roofs. Of public buildings worthy of notice are the cathedral, the town-hall, and the new market. The climate is healthful; but as there are no rivers near the town, water is scarce, and till 1870—when it was introduced by a new aqueduct 40 m. long—was obtainable only from wells, or by collecting rain-water in cisterns. The bay or harbor, about 3½ m. long by 2 broad, presents good facilities for building wharfs, docks, etc., is sheltered from all but the s.w. gales, and averages 16 or 17 ft. in depth; but its depth has diminished about 5 ft. in this century; while its sheltered part, called the harbor, also is shoaling year by year, so that large vessels are compelled to anchor farther out and in an unsafe position. There are plans for its improvement, but they are not prosecuted with energy. The trade of M. V. is extensive; the exports consisting of wool, hides, hair, tallow, salt and dried beef, bones, etc.; and the imports, of cotton and woolen fabrics, hardware, also flour, wine, spirits, and other provisions. The chief trade is with Great Britain. M. has steam-communication with the United States, Rio Janeiro, Britain, and Genoa; and has considerable trade with France, Spain, La Plata, and Italy. In 1880 entered 1,076 vessels, of 794,443 tons; and 871, of 713,177 tons, cleared the port. Imports 1880 amounted to about $16,167,500; exports to about $10,238,800. Pop. (1862) with the small suburbs Cordon and Aguada 45,765; (1871) 105,296; (1901) with its environs 278,186, one-third foreigners.—For the history of M., see URUGUAY.

MONTESQUIEU.

MONTEZUMA I., *mŏn-tė-zô'ma*, Emperor of Mexico—the most able of the Mexican emperors: ascended the throne about 1437; died 1471. Early in his reign he commenced a war with the neighboring monarch of Chalco, which resulted in the annexation of that kingdom to Mexico. Tlatelolco, Cuihixcas, and Tzompahuacan were afterward annexed. Some reverses which his arms now suffered led to a confederacy of the Tlascalans and two other powerful tribes against him; but in the war which followed, M.'s arms were again signally triumphant, and the territories of the conquered tribes increased the domain of the now all-powerful Montezuma.

MONTEZU'MA II., Emperor of Mexico—the last before its subjugation by the Spaniards: succeeded to the throne 1502; died 1520, June 30. He had distinguished himself as a warrior during the reign of his predecessor, and after his accession, carried the terror of his arms to the frontiers of Nicaragua and Honduras. He was at the same time a member of the priestly order, and did not demit his functions on his accession. He devoted his chief attention to the improvement of the laws and of the internal administration, and displayed his taste for pomp and luxury by the magnificence of his household arrangements and a profuse embellishment of his capital. This necessitated heavy taxation, which, combined with the strictness of his administration, led to continual revolts among his subjects, especially those who had lately come under his sway. When Cortes landed in Mexico with his small army 1519, M., blinded by an old prophecy, and by the strange appearance of the invaders, acknowledged them as beings of a superior order, and as his masters (see CORTES). The inhabitants of Mexico having risen against Cortes, the latter caused M., who was then his prisoner, to appear in order to pacify them; but being wounded accidentally by a stone flung from among the crowd of his own subjects, he so keenly felt the indignities which he had suffered, that he repeatedly tore the dressing from his wound, and soon afterward died. Some of his children adopted the Christian religion, and his eldest son received from Charles V. the title Count of Montezuma. One of his descendants was viceroy of Mexico 1697–1701. His last descendant, Don Marsilio de Teruel, Count of Montezuma, was banished from Spain by Ferdinand VII., and afterward from Mexico, on account of his liberal opinions, and died at New Orleans 1836.

MONTFERRAT, *mōnt-fār-rât':* formerly an independent duchy of Italy, between Piedmont, Milan, and Genoa, now forming part of the kingdom of Italy. It consisted of two separate portions, Casale and Acqui, between the Maritime Alps and the Po; more than 1,300 sq. m.; cap. Casale. M., after the downfall of the Frankish empire, was ruled by its own margraves till the beginning of the 14th c. This illustrious house for a long time disputed the sovereignty of Piedmont with the House of

Savoy, and sent to the crusades more heroes than any other sovereign house in Europe. Members of the family ruled simultaneously in M., Thessaly, and Jerusalem. On the death of the Marquis John I., 1305, his sister, Iolande or Irene, Empress of Constantinople, succeeded to M.; and her second son became the founder of the family of Montferrat-Palæologus, which became extinct 1533, and M. passed to the Gonzagas of Mantua. In 1631, the dukes of Savoy obtained possession of a portion of M., and 1703, with the consent of the German emperor, the remaining portion passed under their sway, and was incorporated with their own dominions.

MONTFORT, *mŏnt'fort*, F. *mōng-for'*: noble French house, descended, according to the most probable opinion, from Baldwin, Count of Flanders, and Judith, daughter of Charles the Bald. AMAURI 2d, Seigneur de M. (a little town between Paris and Chartres), is the first of the family mentioned in history. He lived in the first half of the 11th c. His son, SIMON 1st, had for his third wife Agnes, daughter of Richard, Comte d'Evreux. He left four sons, of whom only AMAURI 4th had issue. The grandson of this Amauri, SIMON 3d, surnamed the *Bald*, Comte de M. and Evreux, married Amicie, daughter of Robert de Beaumont, Earl of Leicester. His second son was the famous SIMON 4th, Comte de M. and Earl of Leicester, subsequently Comte de Toulouse (abt. 1150–1218, June 25), conspicuous in the terrible crusade against the Albigenses (q.v.). In 1198, he went to Palestine at the head of a troop of French knights, but failed in doing anything against the Saracens, and was compelled to return. In 1202, he joined the 4th crusade, which, however, had no religious design at all (see CRUSADES), in consequence of which M. abandoned it. In 1209, he took part in the war of extermination against the Albigenses. He signalized himself by relentless ferocity and his brilliant successes, but was killed by a stone at the siege of Toulouse. He was father of Simon de M., Earl of Leicester.

MONTFORT, SIMON DE, Earl of Leicester: about 1200–1265, Aug. 4; b. France; fourth son of Simon 4th, who was Comte de M. and Earl of Leicester. The title Earl of Leicester came to M. by his grandmother, Amicie de Beaumont, sister and heiress of Robert, Earl of Leicester; but he did not directly or immediately inherit it, for, during the reign of King John, it was borne by Ranulf, Earl of Chester. Some time after the death of Ranulf, M. came to England, and offered his services to Henry III. Already he had great reputation as a warrior, and Henry was so highly pleased with the young French noble, that he conferred on him the title Earl of Leicester. Little did Henry think that the stranger was to prove against himself a great founder and champion of English constitutional liberty. He married Elinor, sister of King Henry III., youthful widow of that Earl of Pembroke to whom, more than to any

other, the people of England owe Magna Charta. After this marriage—which was viewed with disfavor by the king—De M. became a steadfast advocate of the English Charter and of the liberties of the people as against oppression by the crown and undue exaction by the Roman see. After visiting the East, he was sent by the king to undertake the command of Gascony. In 1257, the king's debts were so great, and the rapacity of his foreign relations so unbearable, that the people were in a state of insurrection. The barons assembled, and, under the direction of De M., held the celebrated parliament at Oxford. They passed statutes to enforce the provisions of Magna Charta. The king swore to observe them, but sent forthwith to the pope, praying to be absolved from his oath. The bull of absolution arrived. Henry set his barons at defiance, shut himself up in the Tower, and appealed to Louis of France. England was now in arms. The whole middle class looked up to De M. as their champion and leader, and the war began with the battle of Northampton. The wars of the barons, under De M., have been superficially viewed as the strife of turbulent nobles, who, in the absence of foreign warfare, employed themselves in a contest at home. Later researches, however, have shown that, but for the struggles of De M. and the barons, the concessions at Runnymede would have been a mere worthless parchment. At Lewes, the royal forces were signally discomfited, and the king taken captive. A French chronicler, who praises De M. as 'noble, chivalrous, and the ablest man of the age,' expressly adds that he was 'backed by the general favor of the people,' who at this time were 'unspeakably trampled under foot, and deprived of all their liberties.' The conditions exacted from the king were, that he should observe Magna Charta and the Charter of the Forests; be moderate in his expenses and grants, until his old debts were paid off, and until he was enabled to live on his own property, without oppression of merchants or the poor; and that Englishmen only should be chosen counselors. No new pretensions were introduced, even at this moment of triumph, and the constitutional maxim of respecting the person of the king was carefully upheld. The queen (Elinor of Provence). who was in France, now occupied herself in collecting a large army. To deliberate on the measures to be adopted at this great crisis, writs were issued to the sheriffs, 1265, by De M., directing them to return two knights for each county, and two citizens or burgesses for every city and borough; and from this time may be clearly dated the recognition of the commons as an estate of the realm in parliament. Guardians had been appointed by the barons to watch over the execution of Magna Charta, but 50 years of encroachment on the part of the crown convinced De M. that a stronger and more enduring security would be to commit the care of constitutional freedom thenceforth to the people themselves, whose interests the

barons thus identified with their own. Mr. Blaauw, who, in his *Barons' War*, presents De M. almost for the first time in his true character, against the mistaken statements accepted by Hume and others, adds, that 'it should be an honest pride to us in after-times that English liberty thus owes its birth to the noblest parentage, confidence in the people': probably it would be more accurate to speak, in connection with De M., not of the 'birth' of English liberty, but of its furtherance at an important crisis. A second war broke out, and this time the popular cause was weakened by defection and treachery. Prince Edward (afterward Edward I.) encountered the barons at Evesham, with a greatly superior army. When defeat was inevitable, the great leader refused to flee. He 'fought stoutly like a giant for the liberties of England,' but fell, overwhelmed by numbers. The death of De M. filled the whole land with mourning. Like Cromwell, whose career in many respects resembles his own, he was denied a grave by the royalists, his head being sent to Wigmore Castle, and his mutilated limbs to different towns; but the people bewailed their dead champion, and the clergy pointed to his glorified spirit in heaven: the people even revered him as a saint and martyr, and invoked his intercession. The influence of De M. was such after his death that it was not deemed prudent to put to death any of the barons who had borne arms against his sovereign; and though the Oxford statutes were formally rescinded, their spirit remained. See *Life*, by M. Creighton (1876), and *Simon de Montfort*, by Pauli, translated by Una M. Goodwin (1876).

MONTGOLFIER, *mŏnt-gōl′fĭ-ėr*, F. *mōng-gol-fe-ā′*, Jacques Étienne; and Joseph Michael: two brothers, distinguished as inventors of the first kind of Balloons (q.v.): Étienne d. Servières 1799: Joseph, the elder brother, d. Paris 1810. They were sons of a noted paper-manufacturer at Annonay, dept. of Ardèche, and early engaged in the same industry. Etienne, after a few successful experiments with the balloon, repaired to Paris; but though his discovery created a great sensation, and was followed out in practice by many eminent men, he obtained little pecuniary aid in carrying on his experiments, and at length retired to his native town, and there resumed the manufacture of paper.—The elder brother, Joseph, had much genius and little education; but the two brothers were fitted to supplement each other's deficiencies, and together they made many discoveries, and both were received as members of the French Acad. Joseph invented the hydraulic screw, the calorimeter, etc., and in the latter part of his life filled a post in the dept. of arts and manufactures.

MONTGOMERY, *mont-gŭm'ĕr-ĭ:* city, cap. of Montgomery co. and of the state of Alabama, on the Alabama river, 180 m. n.e. of Mobile by railroad, 330 m. by steamer. Seven railroads, the Louisville and Nashville, Western, Georgia Central, Mobile and Ohio, Atlantic Coast Line, Seaboard Air Line, and Union Springs and Northern, furnish connection with all inland points, while steamers connect with Mobile lines from various domestic and foreign ports. It is in a rich cotton-growing region, and its annual receipts of this staple range from 150,000 to 175,000 bales. In recent years there has been a great increase of manufacturing, with a rapid development of commercial interests and growth in population. The city has numerous churches, good schools, which are free and are open nine months each year, several private schools, three daily newspapers, three national and one private bank, a widows' and an orphans' home, and an infirmary for the sick and poor. M. is beautifully located and is one of the most healthful cities in the south. Water is supplied by the Alabama river, also by an artesian system which furnishes 5,000,000 gallons per day and the works for which cost $300,000. The state-house on Capitol Hill, a fine structure, was rebuilt, 1851. Among notable buildings are the city hall, court-house, and masonic temple. The city is lighted by gas and electricity, and has two lines of electric street railroad. In 1900 it had 163 manufacturing establishments, employing $2,930,782 capital and 2,563 workmen and clerks, paying $802,183 in wages, and turning out $5,035,190 in products. There are a cotton-mill; cotton-seed-oil mills, ice factories, a large flour-mill, carriage and wagon shops, foundries, wood-working factories, a vinegar factory, a paper-box shop, a brewery, etc. Among the other manufactures are alcohol, candy, crackers, brooms, soap, and fertilizers. M. was settled 1817. It received its name from Gen. Richard Montgomery. M. was made the first capital of the Southern Confederacy, whose government was organized there 1861, 4 Feb. The next year the capital was removed to Richmond; the Union Army re-occupied Montgomery 1865, 12 April. Pop. (1910) 38,136.

MONTGOMERY, *mont-gŭm'ĕr-ĭ,* GABRIEL, Comte DE: French knight of Scottish extraction, officer in the Scottish Life-Guard of the king of France: abt. 1530-1574, May 27. At a tournament given 1559, June 30, by Henry II. in honor of his daughter's marriage with Philip of Spain, the king insisted upon young M. entering the lists with him. M. reluctantly complied, and the shaft of his broken lance entering the king's visor at the eye, Henry II. was borne insensible from the ground, and so continued 11 days, when he died. M., though blameless, left France, and soon afterward embraced Protestantism in England. On the commencement of the religious wars 1562, he returned to his native country to support

the Prot. cause, was one of the Prot. leaders, defended Rouen with great bravery, and gained advantages over the royalists. During the massacre of St. Bartholomew, he happened to be in Paris, and owed his escape to the swiftness of his horse, and fled to England. In 1574, at the head of a band of Huguenots, he landed in Normandy, and commenced war; but being compelled at last to surrender the castle of Domfront, he was carried to Paris; and though the general to whom he surrendered had assured him of his life, he was beheaded, after long imprisonment.

MONTGOMERY, JAMES: minor British poet: 1771, Nov. 4—1854, Apr. 30; b. Irvine, Ayrshire, Scotland; son of a Moravian preacher. At the age of seven years he was sent to the Moravian settlement at Fulneck, near Leeds, to complete his education for the Moravian pastorate. At Fulneck, the course of study seems to have been too severe in its character for the young poet; the imaginative side of his mind was allowed no recognition, and it was only by stealth that he read Cowper's poems and *Robinson Crusoe*. Much of his leisure at school was employed in the composition of verses and of music. In 1789, he ran away, and, after four years of various employment, became engaged as clerk to the editor of *The Sheffield Register*, for which he soon began to write political articles. In 1794, he commenced a newspaper of his own, *The Sheffield Iris*, which he continued to edit till 1825, when he retired. During his editorship, M. was twice subjected to fine and imprisonment: 1795 he was fined £20, and sentenced to three months' imprisonment, for printing some copies of a miserable ballad in which govt. suspected that sedition lurked; and 1796 he was fined £30, and imprisoned six months, for giving an account of a Sheffield riot. He received a govt. pension of £150 in 1835, and he died at his own house in Sheffield. His principal works are: *The Wanderer of Switzerland* (1806); *The West Indies* (1809); *The World before the Flood* (1812); and *The Pelican Island, and Other Poems* (1827). A collected ed. of his minor poems appeared 1851; and 1853 his *Original Hymns for Public, Private, and Social Devotion* closed the series. See his Memoirs, of value as materials for the provincial political history of his times (7 vols. 1856–58).

His poems are melodious, full of picturesque description and the gentlest human feeling. The personages introduced in his poems are, however, only shadows, or touched with the faintest color of character. But he holds a well-defined position among the favorite poets of his country by several of his hymns and minor poems, and by his exquisite verses on Home, which commence the third part of *The West Indies*. His poetic repute has suffered somewhat by his being confused with Robert Montgomery (q.v.).

MONTGOM'ERY, John Berrien: 1794, Nov. 17—1873, Mar. 25; b. Allentown, N. J.; entered the U. S. navy 1812, and as midshipman took part in the attack on Kingston, Canada, and the capture of Little York, Fort George, and Newark. In 1813, Sep. 10, he was with Perry when he captured the British fleet on Lake Erie, and received the thanks of congress and a sword for his gallant services. 1814, Aug., he assisted in the attack on Mackinaw. In 1815 he fought with Decatur against the Algerine pirates; and 1818, Feb., was promoted lieut. Made commander 1839, he took part in the Mexican war, in the blockade of Mazatlan, and in the capture of Guaymas on the Gulf of California. He was executive officer of the navy-yard at Washington 1849–51; 1853 was commissioned capt.; 1857 commanded the *Roanoke* and brought Walker's 250 filibusters to New York; 1859–62 commanded the Pacific squadron; 1862 was retired as commodore; and 1866 was made rear-admiral. He died at Carlisle, Pa.

MONTGOM'ERY, Richard: 1736, Dec. 2—1775, Dec. 31; b. near Feltrim, Ireland. Educated at Trinity College, Dublin, he entered the English army as ensign at the age of 18. In 1757 his command was ordered to Halifax, N. S., and soon afterward he took part in the siege of Louisburg, where he was made lieut.; was with Amherst in his expedition against the French on Lake Champlain in 1759; next year he became adjt.; served in the campaign against Montreal, and was made capt. 1762. Then he was ordered to the W. Indies; but, 1763, returned to New York, soon afterward going to England, where he formed the friendship of many influential liberal members of parliament. In 1772 he sold his commission, and next year came to America, bought a farm near New York, and married the daughter of Judge R. R. Livingston. He was chosen a delegate to the first provincial congress, New York, 1775, May; and in June was made a brig.gen. in the continental army, being the only officer of that rank not from New England. Owing to Gen. Schuyler's illness, M. was put in command of the expedition to Canada, and in the face of great difficulties and discouragements in a short time took the forts of St. Johns and Chambly, and, 1775, captured Montreal. His army by this time numbered only about 300 men, to which Arnold's command of 600 men was added, with which meagre force he besieged Quebec 1775, Dec., having been promoted to maj.gen. for his services. The cold weather, the breaking out of small-pox in the army, and the fact that the term of service of most of his men was about to expire, constrained him to urge an immediate assault on the city. He himself led the attack on the s. part of the lower town, in a heavy snow-storm Dec. 31. The first barrier was gallantly overcome, and M. was leading his men on with cheering words, when a British discharge of artillery killed him and his two aids, and threw his command into confusion, so that the British succeeded in driving the Americans back and

capturing about 400 of their men. The British joined the Americans in paying tribute to his bravery, the gov. and city officials burying him with military honors, while congress passed resolutions of 'grateful remembrance, respect, and high veneration,' and erected a monument to his memory in front of St. Paul's Church, New York. In parliament Burke lauded his virtues. On the rocks over Cape Diamond, where he led his men and was killed, have been inscribed the words: 'Here Major-General Montgomery fell, December 31, 1775.' In 1818, by a special 'act of honor' of the N. Y. legislature, the gov.-gen. of Canada was requested to permit the remains of M. to be removed to New York. This being granted, they were buried in St. Paul's Chapel, near the monument erected by congress to his memory. His widow survived him 52 years, dying 1828.

MONTGOM'ERY, Robert: clergyman and verse-maker, who gained notoriety, if not fame: 1807–1855, Dec. 3; b. Bath, England. He graduated B.A. at Oxford 1833, M.A. 1838, and was ordained 1835. In 1836, he became minister of Percy Street Episcopal Chapel, London: he afterward removed to Glasgow, where he preached four years, but returned to London, and resumed office at Percy Street Chapel 1843. M.'s works comprise a large number of volumes in prose and verse, on themes more or less sacred. He is best known by his so-called poems; and these are made notable by Macaulay's scathing ridicule of them, which, however, did not check their sale. Macaulay, in his essay, points out M.'s feebleness and absurdity in thought and expression. *The Omnipresence of the Deity* (1828) reached its 28th ed. 1858. But M.'s works have now become part of the lumber of libraries.

MONTGOM'ERY, William Reading: 1801, July 10—1871, May 31; b. Monmouth co., N. J. He was educated at West Point, graduating 1825, when he became lieut., and was on garrison duty till 1838. Then he was made capt., serving on the Canadian border 1838–40, in the Florida war 1840–42, and taking part in the occupation of Texas 1845. During the Mexican war he was twice wounded—at Resaca de la Palma, when he was made brevet major, and at Molino del Rey, after having been made commander of his regt. As such he led it at Chapultepec and Mexico. He was then brevetted lieut.col., and commissioned maj. 1852. In 1855 he was removed from the army because of his sympathy with the free-state men in Kan., where he then was stationed. When the civil war began, he at once raised the 1st regt. N. J. volunteers, and was with the army in its defeat at Bull Run. In 1861, May, he was made brig.gen. of vols. and military gov. of Alexandria, Va., as afterward he was of Annapolis, Md. Then he was stationed at Philadelphia till 1863, and at Memphis, Tenn. Owing to failing health he resigned 1864, Apr. 4, and entered business in Philadelphia. He died in Bristol, Penn.

MONTGOM'ERYSHIRE: inland county of n. Wales, between Shropshire on the e. and the Welsh counties, Merioneth and Cardigan, on the w.; greatest length s.e. to n.w. about 40 m., breadth about 35 m.; 495,089 acres or about 773 sq. m., of which about 80,000 acres are under tillage. The surface is almost wholly mountainous, largely bleak elevated moorlands; but toward the English border are several warm, fertile, and well-wooded valleys. Offa's Dyke traverses the s.e. corner. The Severn, the Vyrnwy, and the Dovey are the principal rivers. The county belongs almost entirely to the basin of the Severn. The mineral wealth of M. is not great, but copper, lead, and zinc are procured, and millstones, slates, and limestone are quarried. On the uplands, the soil is poor, and suited principally for mountain pasture; but in the valleys grain and flax are raised. Cattle and sheep and the pure breed of Welsh ponies called 'Merlins' are reared. The Welsh-flannel manufacture is extensive in the county. The cap. is Montgomery (pop. 1,500), from which the county received its name, and which was so called from Roger de Montgomery, Earl of Arundel and Shrewsbury, who, 1093, recaptured the town and castle, which had been wrested during the previous year by the Welsh from the founder, Baldwin, lieut. of the Marches to William the Conqueror and William Rufus. The county sends one member to the house of commons. The county business is carried on at Welshpool and Newtown alternately. There is excellent trade in cattle and horses.—Pop. (1871) 67,623; (1881) 65,798; (1891) 58,003; (1901) 54,892.

MONTH, n. *mŭnth* [AS. *monath*, a month—from *mona*, the moon: L. *mensis;* Gr. *mēn;* Ger. *monat*, the period of the moon's revolution: Goth. *mena;* Icel. *mana;* Ger. *mond;* Gr. *mēnē*, the moon]: the twelfth part of the year; in popular usage, four weeks. MONTH'LY, a. *-lĭ*, happening once a month, or every month; lasting a month; performed in a month: AD. in every month: N. a monthly publication. CALENDAR MONTH, one of the twelve divisions of the year, from 28 to 31 days in each. LUNAR MONTH, one revolution of the moon, occupying from one new moon to another, about 29 days, 12 h., 44 min. MONTH'S MIND (in the old English sense of *month's remembrance*), in the Rom. Cath. Church, a memorial office for the dead, either continued through a month after decease, or repeated at the end of a month. THIS DAY SIX or THREE MONTHS, in *Parliament*, a common motion, when the rejection of a bill is desired, that its next stage shall be taken at a time when the house will not be sitting—should the motion be carried, such a bill cannot be reintroduced in the same session.

MONTH: originally the period of the moon's revolution round the earth. If this is reckoned from the position of the moon among the stars to her return to the same position, the period is called a *sidereal* month, and consists of 27 days, 7 hours, 43 minutes, 11½ seconds; but if from new moon to new moon, it is longer, being 29 days, 12 hours, 44 minutes, 3 seconds; this is called a *synodic* month (see MOON). The latter period forms one of the three natural measures of the lapse of time, and, notwithstanding that its efficiency depends on the state of the atmosphere, it ranks next to the day in importance. There are several other periods used by astronomers to which this name is applied, as the *tropical* or *periodic* month (27 days, 7 hours, 43 minutes, 4·7 seconds), reckoned from the moon's passing the equinox till her return to the same point; the *nodal* month (27 days, 5 hours, 5 minutes, 29 seconds), from ascending node to ascending node; the *anomalistic* month (27 days, 13 hours, 18 minutes, 37 seconds), from perigee to perigee; and the *solar* month, the twelfth part of a solar year, consisting of 30 days, 10 hours, 29 minutes, and 4 seconds. Distinct from all these is the *civil* or *calendar* month, fixed by law for ordinary purposes, and consisting of a fixed number of days—from 28 to 31—according to the particular month. The calendar months are as follows:

	Days.		Days
1. January,	31	7. July,	31
2. February,	28	8. August,	31
" (leap years),	29	9. September,	30
3. March,	31	10. October,	31
4. April,	30	11. November,	30
5. May,	31	12. December,	31
6. June,	30		

See also the separate months under their own titles. The names by which the months are designated throughout Christendom were given them by the Romans, though Charlemagne in the 9th c., and the French directory in the end of the 18th c., attempted to substitute descriptive epithets.

MONTHOLON, *mōng-to-lōng'*, CHARLES TRISTAN DE, Comte, afterward Marquis DE: 1782–1853, Aug. 21; b. Paris; descended from an ancient French family. At the age of 10 he entered the navy, but exchanged it for the army in 1798. His rise was rapid. He displayed great zeal on behalf of the first consul in the revolution of 18th Brumaire, in the capacity of *chef d'escadron*. He served in a number of campaigns, and was severely wounded at Wagram. Napoleon made him his chamberlain in 1809. He was made a general of brigade in 1814, and appointed to the chief command in the department of Loire. On Napoleon's abdication, M. remained in France, but held aloof from the Bourbons. No sooner had the emperor escaped from Elba and landed at Fréjus, than M. hastened to join him. He was present at Waterloo, and accompanied Napoleon to St. Helena, continuing his devoted attentions to him till he breathed his last, and being named

in his will as one of his trustees, spared no exertion to carry its provisions into effect. Along with Gen. Gourgaud, he published *Mémoires pour servir à l'Histoire de France sous Napoléon, écrits à Ste.-Hèlène sous sa dictée* (8 vols. Par. 1823). He afterward published a work entitled *Récito de la Captivité de Ste.-Hélène* (London. 1847). In the proclamation which Louis Napoleon issued on his landing at Boulogne in 1840, M. was named chief of his staff, and on this account he was condemned by the chamber of peers to 20 years' imprisonment; but he was afterward pardoned.

MONTH'S MIND: see OBIT.

MONTI, *mon'te*, VINCENZO: regenerator of modern Italian poetry: 1753, Feb. 19—1828, Oct. 13; b. in the Roman province of Ferrara. He studied in the Univ. of Ferrara. On the termination of his studies, he went to reside in Rome (1778), where M., whose fault through life was a hasty susceptibility, became involved in a bitter squabble with Alfieri, whose fame as the master-tragedian of Italy was then in the ascendant—a fact which may have been unpalatable to M., in consequence of the failure of his own dramatic attempts. The assassination of Basville, the republican envoy of France, afforded to M. a subject for his poem, *La Basvilliana*. His two succeeding poems, the *Musogonia* and the *Feroniade*, contained bitter invectives against France and Bonaparte; but on the appearance of a French army before Rome, M., with the inexcusable inconsistency which characterized his political conduct throughout, hastened to espouse the cause of France, and to invoke the protection of Bonaparte. M. was shortly afterward appointed sec. of the Cisalpine Directory; and 1789 went to France, where he undertook the translation of Voltaire's poetical works. Returning to Italy, he was appointed prof. in the Univ. of Pavia. On the fall of the empire, M. became the eulogist of the Austrian possessors of his country. Through all these political vicissitudes, he pursued with vigor his studies of the classics, and accomplished one of his greatest works, the translation of the *Iliad* into Italian verse. M. died at Milan. The best editions of his works are those of Milan (1825–27, 8 vols.), and *Opere Inedite e Rare* (Milan 1832-3, 5 vols.). M. had warm admiration of Dante, and partook, in some degree, of the quality of the great master. His best works are distinguished by sustained grandeur of imagery and diction, by daring flights of imagination, and by the delicacy, elevation, and fire of the sentiments.

MONTICELLO, *mŏn-tē-sĕl'lō:* for 60 years the home of Pres. Thomas Jefferson, 3 m. w of Charlottesville, Albermarle co., Va. The mansion, completed about 1774, was one of the most beautiful in the South, and the grounds were laid out in the most attractive manner. The grave of Jefferson, in a family cemetery close by, is marked by an obelisk of granite. Soon after the death of its founder the estate passed out of the possession of his family, and the mansion has fallen into decay.

MONTICLE, n. *mŏn'tĭ-kl*, or MON'TICULE, n. *-kūl* [a dim.—from L. *mons* or *montem*, a mountain or great hill]: a little mount; a hillock. MONTICULATE, a. *mŏn-tĭk'ū-lāt*, having many small projections. MONTON, n. *mŏn'-tŏn*, among *miners*, a heap of ore; a mass under the process of amalgamation.

MONTILLA, *mōn-tēl'yâ:* town of Spain, in the modern province of Cordova, 20 m. s.s.e. of the city of Cordova; on a hillside rising from the s. bank of a tributary of the Xenil. Manufactures of coarse linen and earthenware are carried on, and oil-mills are in operation. A famous pale, dry, light wine is grown in the vicinity; and from the name M. is named the sherry known as Amontillado. M. was the birthplace of Gonzalo de Cordova, the 'Great Captain.' Pop. about 14,000.

MONTJOIE ST. DENIS, *mōng-zhwâ' săng deh-nē':* war-cry of the ancient kings of France, said to be as ancient as the days of Clovis, and from which the king-of-arms, Montjoie, who had exclusive jurisdiction in French heraldry, derived his title.

MONTLUCON, *mōng-lü-sōng':* town of central France, dept. of Allier, picturesquely situated on a hill on the right bank of the Cher, 40 m. w.s.w. of Moulins. It has extensive manufactures of iron, steel, and plate-glass, besides lime-kilns, saw-mills, and woolen-mills. Its railway connections are abundant, and it has trade in corn, wine, and fruits. M., as a great industrial centre, has sometimes been called the French Manchester. At a distance of 10 m. are the wells of Néris-les-Bains, famous in the time of the Romans—of whom many traces are left—and still frequented by invalids.—Pop. (1881) 24,767; (1886) 26,250; (1896) 31,595.

MONTMARTRE: see PARIS.

MONTMORENCY, *mōng-mo-rŏng-sē*, ANNE, first Duc DE, Marshal and Constable of France: b. 1493, Mar.—1567, Nov. 12; b. Chantilly; of one of the oldest and greatest of the noble families of France, named from Montmorency, place about 9 m. n.n.w. of Paris. He received, it is said, the name of *Anne* from his godmother, Anne of Brittany. He distinguished himself by gallantry and military skill in the wars between Francis I. and Emperor Charles V., and was taken prisoner with his sovereign in the battle of Pavia, fought against his advice. He afterward became the leader of the French govt. showing great ability in finance and diplomacy, and was made constable 1538; but his rough manners made him an object of dislike to many; and the suspicions of the king having been aroused against him, he was suddenly banished from court 1541, and passed ten years on his estates, till the accession of Henry II., when he came again to the head of affairs. In 1557, he commanded the French army which suffered the terrible defeat of St. Quentin, in which he was taken prisoner. During the minority of Charles IX., M., with the Duke of Guise and the Marshal St. André, composed the

famous triumvirate which resisted Catharine de Medici. In 1562 and 67, he commanded the royal army against the Huguenots, and in both wars gained victories, but received a fatal wound at St. Denis, and died at Paris on the following day.

MONTMORENCY', Henri II., second Duc de: 1595, Apr. 30—1632, Oct. 30; b. Chantilly; grandson of the famous Constable de M. His godfather was the great *Henri Quatre*, who always called him his 'son.' When he was 17 years of age, Louis XIII. made him admiral, and he defeated the Huguenots in Languedoc, and took the Isle of Ré from those of Rochelle. He afterward gained other victories over them, and 1630 received the chief command of the French troops in Piedmont, where he defeated the Spaniards, for which he received a marshal's baton. Unhappily for himself he ventured to oppose Richelieu, who had always been his enemy, and espousing the cause of Gaston, Duke of Orleans, led the rebel army; for this he was declared guilty of high treason, and Marshal Schomberg being sent against him, defeated him at Castelnaudary, and took him prisoner. Montmorency, though almost mortally wounded, was carried to Toulouse, sentenced to death by the parliament, and notwithstanding his expressions of penitence, and the most powerful intercessions made for him—e.g., by King Charles I. of England, the pope, the Venetian Republic, and the Duke of Savoy—was beheaded. Montmorency was distinguished for amiability and courtesy of manners, as well as for valor.

MONTMORENCY' (or Montmorenci), Falls of: on the Montmorency river in Canada, near its mouth, about 8 m. from Quebec, near the little village of Montmorency. The river, 50 ft. wide, falls 250 ft.

MONTOJO, Patricio: Spanish naval officer: b. 1833. He entered the navy when a young man, and at the outbreak of the Spanish-American war was in command of the Spanish fleet in the Pacific. This force was attacked by the American Pacific squadron under Dewey in Manila Bay 1898, May 1. Montojo's flagship, the *Reina Christina,* was successively engaged by the *Olympia, Baltimore, Raleigh,* and *Boston,* received 70 shots, which killed 52 men and wounded 150; and finally caught fire. Montojo transferred his flag to a gunboat. In September 1899 he was court-martialed in Madrid; urged in his defense that the fault of the defeat was the Spanish government's, as it had not given him proper equipment; and was retired without right of promotion.

MONTPELIER, *mōnt-pēl'yėr,* or *mŏnt-pē'lĭ-ėr:* town, cap. Washington county, and of the state of Vermont; in the central part of the state, on the Winooski river, 40 miles from Burlington, about 200 miles northwest of Boston. It is in a beautiful valley on the Central V., the M. & B., and the M. and W. R. railroads, and has considerable trade with adja-

cent agricultural and dairy regions. It has six churches, good schools, is the seat of the Vt. Methodist Sem. and Female College, has the state library, a public reading-room, and two religious and three weekly secular papers and daily newspapers are issued during the legislative sessions. There are two banks, two fire insurance companies, one life insurance company, and four hotels. The state house, of granite in the Grecian-Doric architecture with dome 124 ft. high, is an admirable structure. The city is a summer resort. Pop. (1880) 3,219; (1890) 4,160; (1900) 6,266; (1910) 7,856.

MONTPELLIER, *mŏng-pā-lyā'* (Lat. *Mons pessulanus* or *puellarum*); city of France, dept. of Hérault; 43° 36′ n. lat., and 3° 50′ e. long; about 480 m. s. of Paris, 7 m. from the Mediterranean. Seen from a distance, M. has an imposing appearance, from the number of its towers, steeples, and cupolas; but though its suburbs and the newer parts of the city are clean and well built, the interior of the old town disappoints expectation, being remarkable chiefly for its crooked, dark, narrow, and dirty streets, though it has many good houses. The public walks, especially the Place de Peyrou, one of the finest squares in France (575 ft. long, 410 ft. wide), and some other elevated points, afford superb views, embracing the Mediterranean, the Alps, the Cevennes, and the Pyrenees. The most noteworthy buildings are the cathedral, the theatre, the exchange, the Hall of Justice, the prefecture, the observatory, and the university. The university, founded 1196, is composed of three faculties—medicine, founded 12th c. by Arabian physicians, and still ranking among the best in Europe—exact sciences—and physical sciences. M. has a botanical garden, the oldest in Europe; a public library of 50,000 vols., and a pharmaceutical school; admirable museums, natural history and fine art collections, etc. The industrial products of M. are pigments and other chemical preparations, brandy, liqueurs, perfumes, soap, corks, sugar, cotton, woolen, and fine leather goods; and the trade, which is very important, includes, besides these articles, wine, seeds, olive oil, and fruits. Railways to Marseille, Cette, and other ports, besides various canals, facilitate commercial and social intercourse, and few cities of the empire hold out greater attractions in regard to intellectual culture. Its geographical position has led to its being selected as a place of residence for consumptive patients; but the extreme clearness, and even sharpness of the air in the more elevated parts of the town, the occurrence of the icy wind known as the *Mistral*, and the sudden accession of overpowering heats, seem materially to counteract some of its long reputed advantages. —Pop. (1886) 53,506; (1891) 69,258; (1901) 75,950.

MONTRE, n. *mŏngtr* [F.]: mounted diapason: an organ stop whose pipes form part of the case or are placed away from the sound-board—one of the foundation stops is generally used for this purpose.

MONTREAL.

MONTREAL, *mŏnt-rē-awl′:* largest city of the Dominion of Canada, in the province of Quebec; lat. 45° 31′ n.; long. 73° 35′ w.; 170 m. s. w. of Quebec, 986 m. from the Atlantic; 200 m. below Lake Ontario, 400 m. from New York.

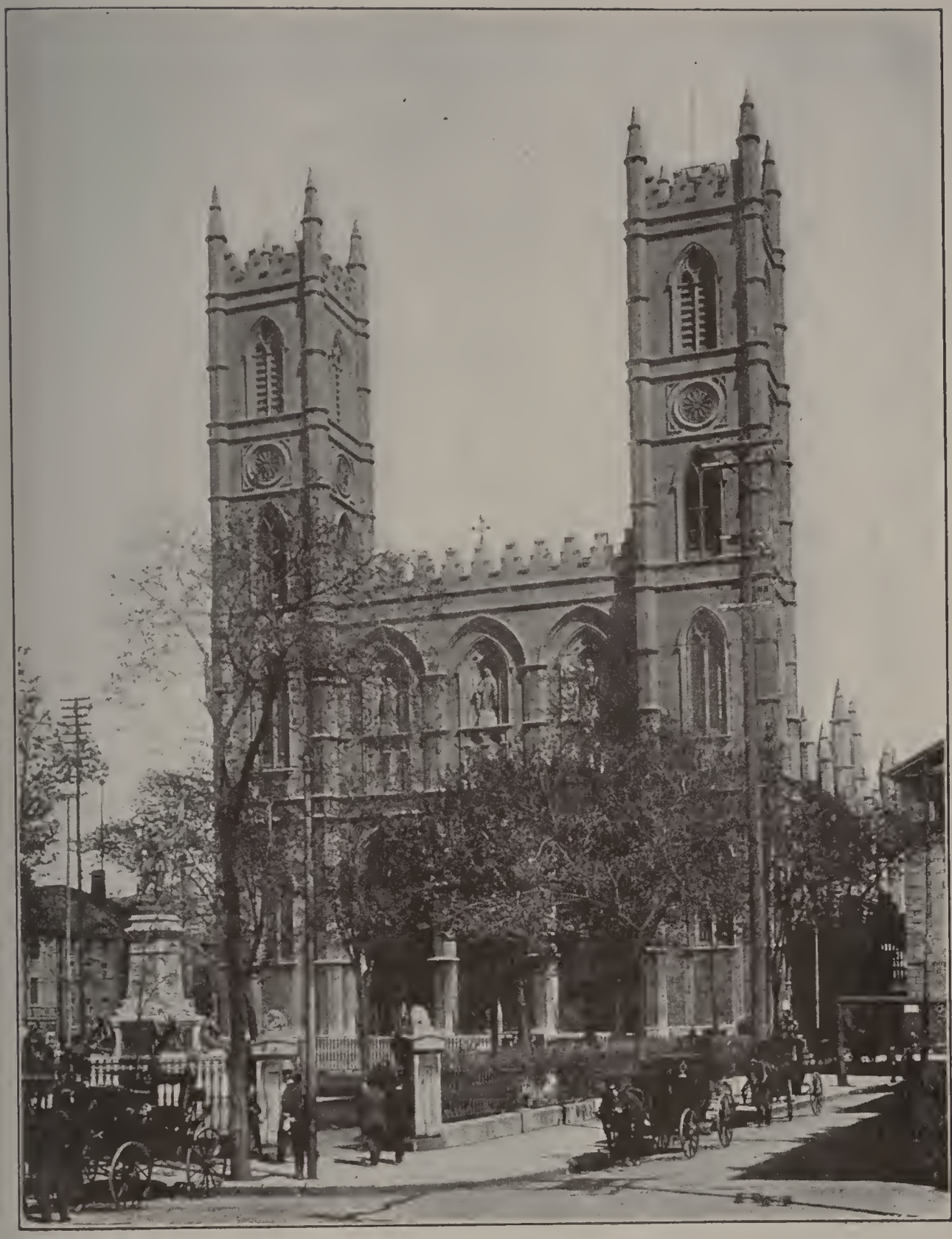
Topography.—M. has a noble situation, being built on a succession of terraces on the side of Mount Royal which rises immediately behind the city to a height of 753 feet above sea-level. The city is built on the southeastern side of the island of Montreal at the confluence of the Ottawa and St. Lawrence rivers, and at a point where the Lachine Rapids make further navigation impossible. Upon three sides of the city the mountain ends in a sheer cliff, but on the western side it extends for three miles in broken ridges. The eastern suburb of M., called Hochelaga, was originally the site of an Indian village of the same name, discovered 1535, Sep., by Jacques Cartier; and it is from his admiring exclamation at the view from the neighboring hill that M. (corrupted from Mont Royal) derives its name.

Navigation, Commerce, Industries, Etc.—By the deepening of the shallower parts of the river above Quebec, M. is now accessible to vessels of over 3,000 tons' burden, and drawing 19 to 22 ft. Its harbor, lined with wharves for a mile and a quarter, at which 125 ships can lie at one time, is, from its inland position (90 m. above the influence of the tides), perfectly safe. Situated at the head of the ocean navigation of the St. Lawrence, M. has naturally become the depot for the exports and imports of all the Canadas. At the same time, the obstruction to vessels sailing further up the river, caused by the rapids, has been surmounted by magnificent canals. The Lachine Canal avoids the Lachine Rapids (see ST. LOUIS, LAKE), and simplifies direct communication with Lake Ontario, which is accessible from Ottawa by the Rideau river and canal. The Welland Canal, passing around Niagara Falls, connects Lakes Ontario and Erie; so that M. is at the foot of an improved chain of inland waters extending to Lake Superior. The canals connecting M. with Lake Ontario have locks of 200 ft. by 45, with 9 ft. of water on the sills; the locks of Welland Canal are rather smaller. By means of the Ottawa, M. is in contact with the vast lumber-country adjoining that river and its tributaries. While navigation is open, an extensive daily traffic is carried on by steamers and sailing-vessels of every description, with Lake Ontario and the Ottawa district, as well as with the lower St. Lawrence; and the ships of the Montreal Ocean Steamship Company, by aid of a subsidy from the Canadian govt., keep up weekly communication with Liverpool, and the harbor is constantly crowded with vessels from other foreign ports. After the navigation of the St. Lawrence is closed, the ocean steamers find a harbor at Portland, Me., connected with M. by a railway of 292 m. This line belongs to the Grand Trunk railway company, and crosses the St. Lawrence at M. by the celebrated tubular Victoria Bridge, the length of which, including its two abutments and 24 piers, is more than a mile and three-quarters. By

the lines of the same company and also by the Canadian Pacific, M. has railway communication with upper Canada, the western states, and lower Canada, while the intercolonial railway gives communication with Halifax and St. John. Several other lines afford direct communication with all the important cities and towns in New England and N. Y. The position, therefore, of M., as a centre of commerce, is scarcely surpassed, and its rapid advance in consequence has placed it, within the last few years, among leading commercial cities of the American continent. The development of Manitoba and the Canadian northwest, and the progress of the Canadian Pacific railway, tend to increase its commercial importance. In 1904-5 the imports were valued at $78,451,031; the exports at $59,411,278; the customs dues totalled $11,591,656. The harbor is open on an average about eight months, from the latter half of Apr. to the beginning of Dec. The manufactures of M. are considerable, the principal being boots and shoes, tobacco, cotton, locomotives, passenger and freight cars, saws and axes, steam-engines, type, India-rubber shoes, paper, furniture, woolens, cordage, and flour.

Public Buildings, Hospitals, Etc.—The public buildings of M. are numerous and handsome. Among them are Bonsecours Market, Courthouse, City Hall, Bank of M., the Art Gallery, the Fraser Public Library with 30,000 volumes, the Canadian Pacific Railway station, the Windsor Hotel, etc. Many of the private residences are magnificent. Among the hospitals are the Hotel Dieu, the M. General, the Royal Victoria, the Notre Dame, the Western General, the Alexandra and the enormous hospital of the *soeurs grises* for foundlings and the aged infirm. M. contains many fine parks and monuments, chief of which are the Viger Gardens, Logan and Mount Royal parks, the Place d' Armies with the bronze statue of Maisonneuve, founder of Montreal; Jacques Cartier Square, with a column and statue of Lord Nelson; Victoria Square with a bronze statute of Queen Victoria; and Dominion Square where there are the statue of Sir John A. Macdonald and the ice palaces erected when Carnival was king.

Churches, Educational Institutions, Etc.—It is for the size and magnificence of its churches that M. is most remarkable. The huge Rom. Cath. Cathedral of St. James (erroneously called St. Peter) is after the plan of St. Peter's at Rome; it is 300 ft. long by 225 wide at the transepts, and is crowned by five domes, one of them 250 ft. high. Though smaller than this, the Church of Notre Dame, hitherto serving as cathedral, is also a very large building. Built in the Gothic style of the 13th c., it can accommodate between 10,000 and 12,000 people. It has six towers, of which the three on the main front are 220 ft. in height; and its chief window is 64 ft. high and 32 broad. Adjoining the cathedral is the Seminary of St. Sulpice, to which a large addition has been built within the last few years at a cost of $40,000. There are several other Rom



CHURCH OF NOTRE DAME, MONTREAL.

Cath. churches among which are Notre-Dame de Lourdes, Notre-Dame-de-Bonsecours, and the Church of the Gesu, with St. Mary's College adjoining. The city contains some of the largest conventual establishments in the world. The general wealth, indeed, of the Rom. Cath. Church in M. has grown enormously in consequence of the increased value of the property given to it during the early settlements of the French. The Church of England has several fine structures, notably the Anglican Christ Church Cathedral, St. George's church, and the church of St. James the Apostle. The principal Presbyterian churches are St. Andrew's (Church of Scotland) a chaste Gothic structure, St. Paul's, Knox, American, Crescent and Erskine churches. St. James, a handsome structure in florid Gothic, is the chief of the Methodist churches. M. is the seat of both Rom. Cath. and Anglican bishops. The educational institutions include McGill University (non-denominational, founded 1821) with which are connected the Presbyterian, Wesleyan, Anglican, Diocesan, and Congregational Colleges; the Medical Faculty of Bishop's College, Lennoxville; a branch of Laval University (Rom. Cath. established in M. in 1877); the Seminary of St. Sulpice, St. Mary's College, and the establishments conducted by the Sisters of the Congregation of Notre Dame and the Sisters of the Holy Names of Jesus and Mary. Public instruction is free; the public schools are controlled by boards of commissioners, one for Catholics and one for Protestants, elected by the legislature and city council.

Government, Finance, Banking, Etc.—The city government is vested in a mayor and a council of 36 aldermen, elected every two years. The assessed valuation of property in 1904-5 was $206,856,475; the net public debt was $27,000,000. The civic income in 1903 was $3,554,428; the expenditures included interest charges $1,089,531, schools $355,000, and general administration $2,401,843. In addition to this there was a water tax of $707,694. There are a number of bank branches in M. and one—the Bank of Montreal—has its headquarters there with a capital of $14,400,000 (Dec. 31, 1906) and a reserve fund of $11,000,000. The total bank clearings during 1905 amounted to $1,326,257,000. M. is supplied with water by works which cost about $600,000; the water is brought from the St. Lawrence above the Lachine Rapids, by an aqueduct five m. long, to a pond, from which it is forced up, by power derived from part of its surplus waters, into reservoirs capable of containing 20 millions of gallons, 200 ft. above the river.

History.—The history of M. dates from 1535 when Jacques Cartier visited the island and found a town named Hochelaga situated about a league distant inland. On the 28th of May, 1611, Samuel de Champlain landed at a place which he named Place Royale. The actual founding of the present city, however, dates from 1642, May 18, when Paul de Chomedy, Sieur de Maisonneuve arrived with

a party of colonists at the foot of St. Mary's current and founded the *Ville Marie-de-Montréal.* The town was engaged for many years in combating the depredations of the Iroquois, but in 1665 their power was broken by the French and but one massacre of any magnitude occurred thereafter. This occurred at Lachine on August 4, 1689, when a number of settlers were killed and 200 captured by a band of 1,500 Iroquois. M. remained under French control until 1760, when, Quebec having been captured the year before and the British being in full control of the St. Lawrence, the city was forced to capitulate to Gen. Amherst on Sept. 8. During the American revolution M. was attacked by troops from the colonies under Brig.-Gen. Wooster, and Gen. Carleton retired to Quebec, the city remaining in possession of the colonists during 1775-6. At this time an attempt was made by the American commissioners under Franklin to detach Canada from its allegiance to England, but the scheme failed and in 1776 the American troops retreated. M. obtained its first city charter in 1833, became the seat of the Canadian government in 1844 but in 1849, when the Parliament buildings were destroyed by a mob who had become enraged at the passage of the "Rebellion Losses Bill," by which, as they conceived, actual rebels were to be compensated for losses they had sustained, the government was removed to Toronto. The greatest disaster which the city has suffered was the conflagration of 1901 when a large portion of the commercial district was destroyed, involving a loss of $4,000,000. The population of Montreal in 1901 was 266,826 but, including the suburbs, it is now estimated at 375,000, of whom 225,000 are French and the remainder of Irish, English and Scottish descent. For the early history of M. consult Maclennan, *Montreal and Some of the Makers Thereof* (Montreal, 1893); Sandham, *Ville Marie,* or, *Sketches of Montreal Past and Present* (Montreal, 1870); and the authorities cited under CANADA.

MONTREAL' ISLAND: large and fertile island on which the city of Montreal is built; 30 m. long, 10 m. greatest breadth; 197 sq. m. Formed by the separation of the two channels by which the Ottawa issues into the St. Lawrence, its surface, except at Mount Royal, is diversified only by gentle undulations.

MONTRESOR, *mŏn-trĕs'ẽr,* FRANCES FREDRICA, English novelist: b. near Walmer, Kent. She is a daughter of Admiral Montresor, and among her books, which have had a vogue in this country as well as in England, are: *Into the Highways and Hedges* (1895); *The One Who Looked On* (1895); *Worth While* (1896); *False Coin or True* (1896); *At the Cross Roads* (1897); *The Alien* (1901).

MONTREUX, *mōng-trėh':* village on the n. shore of the Lake of Geneva, 14 m. s.e. of Lausanne. Its beautiful situation and mild climate and high repute for healthfulness attract many visitors, and the place abounds with *pensions.* There are several other villages (among them, Clarens) in the commune of M.—Pop. of commune abt. 8,000.

PANORAMA OF MONTREAL, FROM MOUNT ROYAL.

MONTROSE, *mŏn-trōz'*: royal and parliamentary borough and seaport on the n.e. coast of Scotland, county of Forfar; at the mouth of the river South Esk, about 80 m. n.e. of Edinburgh, 40 m. s. of Aberdeen. It stands on a level peninsula between Montrose Basin (a tidal loch, 7 m. in circumference, but almost dry at low water) and the mouth of the river South Esk. A fine suspension-bridge, 432 ft. long and 26 ft. broad—erected 1828-9 at a cost of nearly £23,000—connects the town with Rossie Island, which is again connected with the mainland by a small drawbridge. The Royal Lunatic Asylum, opened 1868, accommodates about 400 patients. Between the town and the shore are the 'Links' or downs, among the finest in Scotland for golfing or cricketing. The harbor, one of the best on the e. coast, affords excellent accommodation to vessels of large tonnage, having 18 ft. of water on the bar at low-water of spring-tides. Two light-houses stand in line on the n. bank of the river, about 400 yards apart, while a tower, named the Scurdyness Light-house, erected by the board of trade 1870—exhibiting a clear white light, visible at nearly 20 m. distant—stands at the mouth of the river. Flax-spinning is the chief manufacture. A large saw-mill employs nearly 300 men and boys. There are good schools, an academy, and a public library of about 20,000 vols. Imports—coal, lime, slate, iron, flax, and manures; exports—manufactured goods, salmon, herring, dressed wood, and agricultural produce. Pop. about 13,000.

MONTROSE', James Graham, first Marquis of and fifth Earl of: 1612-1650, May 21; b. at Old Montrose, near Montrose town; of a family that can be traced back as far as 1128.—Its first notable member was Sir John Græme of Dundaff, who fell at the battle of Falkirk, 1298, July 22. Early in the 15th century, Sir William Graham married for his second wife a daughter of King Robert III. Robert, eldest son of this marriage, was ancestor of the Grahams of Claverhouse. The third Lord Graham, created Earl of Montrose by James IV., fell at Flodden; his eldest son at Pinkie. The next in succession became viceroy of Scotland after James VI. had ascended the throne of England. His eldest son, John, who succeeded to the earldom 1616, married Lady Margaret Ruthven, eldest daughter of William, first Earl of Gowrie, and sister of the unfortunate nobleman who gives name to the *Gowrie Conspiracy*. The issue of this union was five daughters and one son, James Graham, the 'great Marquis,' subject of this sketch.

Montrose's mother died 1618, his father 1626. In the following year the boy was sent to the University of St. Andrews by his guardian and brother-in-law, Archibald, Lord Napier, son of the famous inventor of logarithms. During the two or three sessions of his attendance at college,

M. showed a genuine predilection for literature, which the stormy character of his after-life never quite destroyed. In his 17th year he married Magdalene Carnegie, daughter of Lord Carnegie of Kinnaird, Earl of Southesk. On attaining his majority, he left Scotland, to travel on the continent, visited the academies of France and Italy, and perfected himself in the accomplishments of a gentleman and a soldier. On his return, he was introduced to King Charles I., but, owing, it is said, to the machinations of the Marquis of Hamilton, was coldly received by that monarch, and thereafter, soon as he reached Scotland, joined the ranks of the king's opponents—at that period the majority of Scotchmen. M. came back in the very year (1637) when the tumults broke out in Edinburgh on the attempt to introduce the Prayer-book. Whether his conduct at this moment was the result of chagrin, or whether he was carried away by the prevailing enthusiasm, or by the persuasions of craftier persons than himself, is difficult to say. At any rate, the youthful nobleman soon became to appearance one of the most zealous of the Covenanting lords. He was one of the four noblemen selected to compose the 'Table' of the nobility, which, with the other Tables of the gentry, of the boroughs, and of the ministers, drew up the famous National Covenant (see COVENANTS), sworn to by all ranks at Edinburgh in the spring of 1638. In 1639 he made three military expeditions to Aberdeenshire to overawe the royalists; and he twice took the city of Aberdeen. On the first occasion (Mar. 29), he compelled the inhabitants to subscribe the Covenant, but did no injury to the city. His 'too great' humanity is even lamented by Baillie. On the second (May 25), he imposed on the city a fine of 10,000 merks; but though his soldiers pillaged the place, he honorably resisted the importunities of the zealots among the Presb. clergy, who wished to expose it to the horrors of conflagration. Baillie again complains of his 'too great lenity in sparing the enemy's houses.' The arrival at Aberdeen, by sea, of the Earl of Aboyne—Charles's lieutenant of the north—with some reinforcements, induced M. to retreat: he was pursued by the earl and the Gordon Highlanders; and in a battle June 15 at Meagra Hill, near Stonehaven, M. obtained a complete victory. Four days later, he was again master of Aberdeen, after a fierce struggle at the passage of the Dee. The citizens were stricken with alarm, expecting some bloody punishment for their well-known leanings toward prelacy, but M. agreeably disappointed their fears. At a subsequent period, he was upbraided by the Committee of Estates for not having burned the town on this occasion. News of 'the pacification of Berwick' now arrived in Aberdeen, and terminated the struggle in the north. Charles, who was noted for his fascinating power in conversation, invited several of the Covenanting nobles to meet him at Berwick, where he was holding his court, and to consult with him about Scottish affairs. Among those who went was M., and

from that interview the Scotch Presbyterians dated what they regarded as his apostasy. Be that as it may, his political position was certainly different after his return. In the general assembly which met 1639, Aug. 13, under the presidency of the Earl of Traquair, as royal commissioner, he showed symptoms of disaffection toward the Covenant, and was the object of popular obloquy. One night he is said to have found affixed upon his chamber-door a paper bearing these words, *Invictus armis, verbis vincitur*. The dissolution of the parliament 1640, June, led to an open rupture between the king and the Covenanters, and both parties prepared to decide their quarrel by force of arms. The king assembled at York an army of 21,000 horse and foot; the Covenanters one of 26,000, which, under the command of Leslie, crossed the Tweed 1640, Aug. 21, M. being the first man that forded the stream. The successes of the Scots soon forced Charles to summon a new parliament for settlement of national grievances. Meanwhile M., with several other nobles, had entered into a secret engagement at Cumbernauld, for the purpose of frustrating what they regarded as the factious designs of the extreme Presb. leaders. His conduct in England, too, had been suspicious. It was accidentally discovered that he had been secretly communicating with the king; and when the parliament assembled (1640, Nov.), he was cited to appear before a committee. The affair of the *Cumbernauld Bond*, discovered by the ingenuity of Argyle, was brought up; but M. defended his conduct and that of his colleagues; and nothing came of it, though some fiery spirits among the clergy, says Guthrie, 'pressed that their lives might go for it.' In the following June, M. and some others were accused of plotting against Argyle, and were confined in Edinburgh Castle, where they remained till the beginning of 1642, when they were set at liberty in return for the concessions which Charles had made his Scottish subjects. Although they had been frequently examined, nothing definite had been proved against them. The accusation that M. had offered to the king to assassinate Argyle is not historically substantiated, and is intrinsically improbable. During the next two or three years he kept aloof, outwardly, from public affairs, but he had finally broken with the Covenanters, and had privately ranged himself on the side of the king. Indeed, M. had no natural inclination toward Puritanism, and cared little for the ecclesiastical questions involved in the quarrel. As he had opposed the outrageous intermeddling of the crown with the liberties of Scotchmen in their Presb. worship, so now he opposed the harsh, almost insolent control which the Presb. clergy claimed over the laity. The civil war in England had now broken out, and was being carried on with dubious success. Charles and his advisers resolved to crush the Presb. leaders in Scotland, who were abetting the efforts of the English parliamentarians. In the spring of 1644, M., now raised to the rank of marquis, left Oxford, where he had been residing

with his sovereign, and proceeded to Scotland to raise the royalists in the north. The battle of Marston Moor for a moment paralyzed him, but his resolution speedily returned. He threw himself into the Highlands, and, after skulking about the hills in disguise, met at Blair-Athol some Irish auxiliaries and a body of Highlanders under Allaster Maccoll Keitache Macdonald, better known as *Colkitto*, who had forced their way thither from the Western Isles in hopes of joining him. M. instantly placed himself at their head, and the clans quickly rallied round his standard. Marching s., he fell suddenly (Sep. 1) on the Covenanting army commanded by Lord Elcho at Tippermuir, near Perth, and gained a complete victory: not a single royalist was slain. The same night, M. entered Perth, where he remained three days, levying a fine of 9,000 merks on the inhabitants. He then set out for the n., defeated a force of Covenanters under Lord Burleigh at Aberdeen (Sep. 13), and took possession of the city, which was abandoned for four days to all the horrors of war. The approach of Argyle, at the head of 4,000 men, compelled M., whose forces were far inferior in numbers and discipline, to retreat. He plunged into the wilds of Badenoch, recrossed the Grampians, and suddenly appeared in Angus, where he wasted the estates of more than one Covenanting nobleman. Argyle, baffled in his attempts to capture or crush M., returned to Edinburgh, and threw up his commission. His opponent, receiving large accessions from the Highland clans, planned a winter campaign, marched s.w. into the country of the Campbells, devastated it frightfully, drove Argyle himself from his castle at Inverary, and then wheeled north, intending to attack Inverness, where the Covenanters were posted in force under the Earl of Seaforth. The 'Estates' at Edinburgh were greatly alarmed, and, raising a fresh army, placed it under the command of General Baillie, natural son of Sir William Baillie of Lamington. After consulting with Argyle, it was arranged that he should proceed by way of Perth, and take M. in front, while Argyle should rally his great array of vassals, and attack him in the rear. The royalist leader was in the great glen of Albin—the basin of the Caledonian Canal—on his way to Inverness, when he heard that Argyle was following him. He instantly turned on his pursuer, fell upon him unexpectedly at Inverlochy 1645, Feb. 2, and utterly routed his forces: 1,500 of the Campbells were slain, and only four of M.'s men. He then resumed his march northward, but did not venture to assault Inverness—his wild mountaineers being admirably fitted for rapid irregular warfare, but not for the slow work of beleaguerment. Directing his course to the e., he passed —with fire and sword—through Elgin and Banff into Aberdeenshire, which suffered a similar fate, captured and pillaged the city of Dundee (Apr. 3), and escaped safely into the Grampians. May 4, he attacked and routed Hurry at Auldearn, near Nairn; and soon again issued from his wilds, and inflicted a still more disas-

trous defeat on Baillie himself, at Alford, in Aberdeenshire (July 2). There was now nothing to prevent his march s., and about the end of the month he set out with a force of 5,000 to 6,000 men. He was followed by Baillie, who picked up reinforcements on his way, and Aug. 15 again risked a battle at Kilsyth, but was defeated with frightful loss—6,000 of the Covenanters being slain. The cause of Charles was for the moment triumphant; M. was virtually master of the country. The king formally appointed him lieut.gov. of Scotland and commander-in-chief of the royal forces. All the principal cities in the west hastened to proclaim their fidelity, and laid the blame of the recent troubles on the unfortunate Presb. clergy. But affairs soon took a very different turn. Great numbers of the Highlanders returned home —we might even say, deserted—burdened with multifarious plunder; and the Earl of Aboyne withdrew with all his cavalry. M.'s position, in a district teeming with enemies, was growing critical, and Sep. 4 he broke camp at Bothwell, and marched for the eastern counties, where Charles had informed him that the Earls of Traquair, Home, and Roxburgh were ready to join him. In this he was disappointed, and Sep. 13 he was surprised at Philiphaugh, near Selkirk, by David Leslie, who fell upon the relics of M.'s army and his raw levies with 6,000 cavalry—the flower of the Scottish forces then serving in England—who had been hurriedly dispatched home on the news of M.'s startling successes. Leslie completely annihilated his opponent. 'On Philiphaugh,' says Sir W. Scott, 'M. lost the fruit of six splendid victories.' Escaping from the field of battle, he made his way to Athol, and again endeavored, but in vain, to rouse the Highlands; and at last Charles, whose cause now began to decline in the civil war, was induced to order him to withdraw from the kingdom. 1646, Sep. 3, he sailed for Norway, whence he proceeded to Paris. Here he endeavored, but in vain, to induce Henrietta Maria to bestir herself on behalf of her husband. The queen coldly received all his suggestions, and at last M., in despair, betook himself to Germany, in hope of service under the emperor, but soon returned to Holland, and entered into communications with the Prince of Wales, afterward Charles II. It was here that news of the beheading of Charles I. reached him: M. fainted on receipt of the dreadful intelligence, and gave way to the most passionate regrets. Charles II. now re-invested him with the dignity of lieut.gov. of Scotland, and M. undertook a fresh invasion on behalf of the exiled monarch. 1650, March, he arrived at the Orkneys with a small force, and after the lapse of three weeks proceeded to Caithness; but neither the gentlemen nor the commons would rise at his call. He forced his way as far s. as the borders of Ross-shire, where his dispirited troops were attacked and cut to pieces at a place called Corbiesdale, near the pass of Invercarron, by a powerful body of cavalry under Col. Strachan. M. fled into the wilds

of Assynt, where he was nearly starved to death, when he fell into the hands of M'Leod of Assynt, who delivered him up to Gen. Leslie, by whom he was brought to Edinburgh. Condemned to death as a traitor to the Covenant which he had signed, he was hanged. His demeanor in his last moments was noble and dignified. He declared that he was still a Covenanter; that he did not care for bishops, and had never intended to advance their interests.

MONTSERRAT, *mŏnt-sĕr-răt':* one of the Lesser Antilles, belonging to Britain, 43 m. n.w. of Guadeloupe, and about the same distance from Antigua and St. Kitts. It is about 11 m. in length, 7 in breadth; 32 English sq. m. About two-thirds of the surface is mountainous and barren; the rest is well cultivated. The chief products are sugar, limes, rum, and molasses; but cotton, arrow-root, and tamarinds also are exported. The island forms a portion of the government of the Leeward Isles, and is directly ruled by a president, aided by a council and house of assembly. The chief town is Plymouth, on the s. coast. Pop. over 12,000.

MONTSERRAT, *mont-sĕr-rât'* (Lat. *Mons Serratus,* from having jagged ridges *like the teeth of a saw*): mountain of Catalonia, in n.e. Spain, about 30 m. from Barcelona; height 3,919 ft. 'Its outline,' says Ford (*Handbook for Spain,* I. 419), 'is most fantastic, consisting of cones, pyramids, buttresses, nine-pins, sugar-loaves, which are here jumbled by nature in a sportive mood.' The pious Catalonians aver that it was thus riven and shattered at the Crucifixion. Every rift and gorge is filled with box-trees, ivy, and other evergreens. From the topmost height, the eye wanders over all Catalonia, and from the sea the ridge looks like an immense wall with seven pyramidal peaks. The mountain, however, owes its fame not to its extraordinary appearance, but to the Benedictine Abbey built upon it, at an elevation of 1,200 ft., and to the 13 hermitages formerly perched like eagles' nests on almost inaccessible pinnacles. In 1811 the French, under Suchet, plundered the abbey, burned the library, shot the hermits, and hung the monks (who had given shelter to their emigrant brethren at the Revolution). The place suffered still more 1827, when it became the stronghold of the Carlist insurrection.

MONUMENT, n. *mŏn'ū-mĕnt* [F. *monument*—from L. *monŭmen'tum,* a memorial—from *monĕō,* I admonish or remind: It. *monumento*]: anything durable made or erected to perpetuate the remembrance of any person or thing; a structure, as a pillar or mausoleum, erected as a memorial; a tomb; any enduring evidence or example, as a *monument* of folly or wisdom. MON'UMENT'AL, a. *-mĕnt'ăl* [F.]: of or relating to a tomb or monument; memorial; preserving memory. MON'UMENT'ALLY, ad. *-lĭ.*—SYN. of 'monument': cenotaph; memorial; remem-

brance. See CAIRN; CROMLECH; SEPULCHRAL MOUND; PILLAR; OBELISK; PYRAMID; ARCH, TRIUMPHAL; BRASSES, SEPULCHRAL; TOMB; TOPE; MAUSOLEUM; etc.

MONUMENTUM ANCYRANUM: an inscription on the marble walls of the temple of Augustus at Ancyra (modern Angora) in Galatia. It is a transcript in both Greek and Latin of the emperor's own account of his reign, which he had ordered in his will to be set up on bronze tablets before his mausoleum in Rome. Though in fragmentary condition, it is of high historical value.

MONVEL, LOUIS MAURICE BOUTET DE: French painter and illustrator: b. Orleans 1850. He studied with Rudder, Cabanal, and Carolus Duran, with the last, after some work in the Atelier Julien. His first picture exhibited in the Salon appeared in 1874. He prefers the decorative to the realistic effect in color and modeling. The illustrations which he made for the *Life of Jeanne d'Arc* (1897) in the *Century Magazine* are supremely successful both in line and color. In the Memorial Church at Domrémy he has painted six panels illustrating the career of La Pucelle. Among his best known pictures is *The Apotheosis* (1885), and his portraits are famous.

MONZA, *mōn'zâ* (anc. *modœtia*): chief town of a dist. in the province of Milan; on the river Lambro, 10 m. n.n.e. of Milan, with which it is connected by railway. It is essentially a town of Lombard growth, and under the Lombard sovereigns was capital of their kingdom. It owes much of its early importance, and its chief public edifices, to Theodolinda, the great queen of the Lombard dynasty. In the middle ages Monza was conspicuous for the wealth of its numerous citizens and nobles, and the extent of its cloth-trade. It has undergone 32 sieges. The cathedral, founded in the 6th century by Theodolinda, contains many interesting memorials of this great queen. The famous Iron Crown (q.v.) and regalia of Lombardy, employed at the coronation of the German emperors as kings of Italy, were removed from Lombardy by the Austrians 1859, on the cession of that province to France. The town has a good gymnasium, a theatre, two hospitals, and a philharmonic institution. Its manufactures of cottons, hats, and preserved meats are increasing. Monza is surrounded by an exuberantly fertile district, which yields abundance of grain, fruits, wine, and silk, and possesses great beauty of scenery and climate. Pop. 42,500.

MOOD, n. *môd* [Dut. *moed;* Ger. *muth;* Icel. *modr,* spirit, courage]: disposition of mind; temper of mind; a temporary state of the mind; disposition. MOODY, a. *môd'ĭ,* peevish; fretful; out of humor; sad; gloomy. MOOD'ILY, ad. *-lĭ.* MOOD'INESS, n. *-nĕs,* sullenness; peevishness.—SYN. of 'moody': pensive; capricious; varying; mournful; dejected; melancholy.

MOOD, n. *môd* [F. *mode*, fashion, way, mood in grammar—from L. *modus*, a measure, quantity (see MODE)]: in *gram.*, a certain form of inflection indicating the *mode* or *manner*, as regards action, in which the meaning of the verb is presented to the learner, as indicative *mood*, imperative *mood;* in *logic*, the form of a syllogism, as determined by the quantity and quality of its propositions; style of music.

MOOD: in logic, the specific form of a syllogism, dependent on the quantity and quality of its propositions. Classifying propositions as Universal Affirmative, 'A'; Universal Negative, 'E'; Particular Affirmative, 'I'; and Particular Negative, 'O,' the moods are the various possible combinations of 'A,' 'E,' 'I,' 'O,' in the premises of a syllogism. Combining A, E, I, O in pairs, we have sixteen possible moods. Seven of these are invalid, viz.: EE, EO, OE, and OO, since from two negative premises no conclusion can be drawn, and II, IO, OI, since from two particular premises no conclusion can be drawn. This leaves nine possible valid moods. Now, the validity of a syllogism depends also on the relations of subject, predicate and middle term in the premises. Since formal logic treats propositions primarily from the point of view of extension, the distribution of the terms involved must be taken into account. Let S represent subject, P predicate, and M middle or common term, which is the basis of inference. Then we have four figures: (1) M—P, S—M: S—P; (2) P—M, S—M: S—P; (3) M—P, M—S: S—P; (4) P—M, M—S: S—P. Each figure has special rules, which are derived from the particular arrangement of S, P, and M, in that figure. For example, in figure (1) the minor premise, S—M, must be affirmative, for, if it were negative, the conclusion would be negative, P would be distributed in it, and, since only negative propositions distribute their predicates and P must be distributed in the major premise M—P, the latter must be negative, and we would have two negative premises, which prove nothing; the major M—P must be universal, for M must be distributed at least once and it cannot be distributed in S—M, since it is here predicate of an affirmative proposition. By the application of the rules of each figure to the nine possible moods it is determined which are valid for each; e.g., in figure 1 these are AA, AE, AI, EI. See DISTRIBUTION (OF TERMS), and SYLLOGISM.

MOODIE, SUSANNA: English author: b. Suffolk, Eng., 1803; d. 1885. Sister of Mrs. Traill and Agnes Strickland; married J. W. D. Moodie of the 21st Fusiliers 1831; came to Canada 1832 and settled in the unbroken forest near the present Petersborough. Her works include: *Roughing it in the Bush; Flora Lindsay; Matrimonial Speculation; Life in the Clearings; Enthusiasms and other Poems; Mark Hurdlestone; The World Before Them.*

MOODIR, or MUDIR, n. *mô'dēr:* Turkish name for the governor of a city or district.

MOODY, *mô'dĭ*, DWIGHT LYMAN: evangelist: b. 1837, Feb. 5, Northfield, Mass.; d. there 1899, Dec. 22. When only four years of age he lost his father by death. He worked on a farm in summer and attended the country school in winter until he was 17 years old, when he became clerk in a shoe store owned by an uncle, in Boston. He attended the Mount Vernon Congl. Church and Sunday-school, and became a member of that church 1855. Under many discouragements he worked zealously in the church and Sunday-school. He went 1856 to Chicago, obtained a clerkship, and established a mission Sunday-school, which soon had 1,000 members. He relinquished his clerkship and devoted himself to study and religious work. He served the Christian Commission during the civil war, was then employed as city missionary by the Young Men's Christian Assoc. of Chicago, and subsequently became president of that organization. To meet the needs of his numerous converts, most of whom were gathered from classes outside of ordinary religious influences, an independent church was formed of which Moody, though not ordained, was pastor. In the great fire 1871, the church, with a house which had been presented to Moody, was destroyed, but a new church accommodating 2,500 persons took its place. At a convention of the Young Men's Christian Assoc. 1871 Moody met Ira D. Sankey, the famous singer, who joined him in his Chicago enterprise and frequently labored with him in evangelistic service. In 1873, June, Moody and Sankey commenced a series of meetings in the great cities of England, Scotland, and Ireland, which were attended with remarkable results. They returned 1875 and held meetings in many of the large cities of the United States, at which great numbers of people were converted. They visited Great Britain again 1883, returned the following year, and continued their labors in the same line with great success. Without abandoning entirely his evangelistic tours, he made Northfield his headquarters and established there a girls' academy (1879) and a training school for religious workers, and at Mount Hermon a boys' academy. Later he founded a school for Bible study in Chicago; and inaugurated the custom of holding, at Northfield, summer conferences of college students and missionary volunteers, and the annual meetings of the Young Men's and Young Women's Christian Associations. He also established systematic preaching and distribution of religious literature among inmates of the prisons; and built up at Chicago and Northfield establishments for the publishing of inexpensive religious books, tracts, etc. Moody was a close student of the Bible, exceedingly earnest and pungent in his preaching, yet noticeably broad and charitable in spirit. He was deeply versed in the Scriptures, had unfailing tact

and knowledge of men, and used language simple and unambitious, but of singular force and impressiveness. Among Moody's writings are: *How to Study the Bible; Men of the Bible; Weighed and Wanting; Arrows and Anecdotes* (1877); *The Way and the World* (1877); *Heaven* (1880); *Secret Power* (1881); *The Way to God* (1884); and *Bible Characters* (1888).

MOODY, Helen Watterson: American author: b. Cleveland, Ohio. She was graduated from the University of Wooster, Ohio, in 1883, and was instructor in English and Latin there in 1883-7, when she became a member of the editorial staff of the New York *Sun*. She was married to W. S. Moody, a New York journalist, in 1891. She has published: *The Unquiet Sex* (1898); *A Child's Letters to Her Husband* (1903); etc.

MOODY, William Henry: American lawyer and politician: b. Newbury, Mass., 1853, Dec. 23. He was graduated from Harvard in 1876; studied law, and began the practice of his profession in Haverhill, Mass. He quickly attained success as a lawyer, was city solicitor for a time, and from 1890 to '95, district attorney for the eastern district of Massachusetts. In this position he showed himself an active, fearless prosecuting officer, notably in the case of certain aldermen of the city of Lawrence whom he convicted of receiving bribes and brought to punishment; he was also associated with the Massachusetts attorney-general as prosecuting attorney in the trial of Lizzie Borden for the murder of her parents. In 1895 he was unanimously nominated for congress by the Republicans, to fill a vacancy; he was elected at that time, and also to the three succeeding congresses. Through close study of the rules of the house he became distinguished as a parliamentarian, and was suggested as a possible candidate for speaker; he was a most active and efficient member of the committee on appropriations, and regularly had charge of the sundry civil appropriations bill, which he examined in detail; he was also appointed to the committee on insular affairs, and through his work on both these committees gained special knowledge of naval matters. In 1902 he was appointed secretary of the navy to succeed John D. Long; from 1904, July 1—1906, Dec. 16, was attorney-general of the United States; and since 1906, Dec. 17, has been associate justice of the supreme court of the United States.

MOOERS, BENJAMIN: 1758, Apr. 1—1838, Feb. 20; b. Haverhill, Mass. He was ensign in the Revolution, promoted lieut. and adjt., served till the close of the war, and settled in the wilderness 1783, near the present location of Plattsburg, N. Y. He was member of the state legislature eight years, held various county offices, was appointed maj.gen. of militia, and was commander at the battle of Plattsburg, 1814, Sep. 11. His *Order Book*, kept during the Revolution, was published 1876. He died at Plattsburg.

MOOLTAN′: see MULTÂN.

MOON, n. *môn* [Skr. *mâs*, moon; *mâsa*, month—from *mâ*, to measure (see MONTH)]: the luminary of the night which revolves round the earth; the satellite of the earth (see below); a month: V. to be affected by the moon; to be sentimental. MOON′ING, imp. being sentimental; under the influence of the moon. MOONED, a. *môn′ĕd*, in *OE.*, resembling the moon; having the character of the moon. MOONET, n. *môn′ĕt*, a little moon. MOONISH, a. *môn′ĭsh*, variable as the moon; flighty. MOONY, a. *môn′ĭ*, pertaining to the moon. MOON′LESS, a. *-lĕs*, without moonlight. MOON′BEAM, n. a ray of light from the moon. MOON-CALF, a mass of fleshy matter generated in the uterus; a dolt; a stupid fellow. MOON-FISH, a fish so called from the shape of its tail-fin. MOON′-LIGHT, a. illuminated by the moon; occurring during or by moonlight: N. the light of the moon. MOON′LIT, a. *-lĭt*, illumined by the moon. MOON′SHINE, n. the light of the moon; mere show without substance or reality. MOON′SHINER, n. in some mountainous regions of the southern states, a colloquial term for makers of illicit whiskey, and smugglers of whiskey that has been legitimately manufactured. MOON′STONE, n. stone, named also *adularia*, of white color, or of yellowish or greenish white—so called from the beautiful play of light which it exhibits (see FELSPAR). MOON-STRUCK, affected by the influence of the moon—according to popular belief; silly; lunatic. BEYOND THE MOON, out of reach; out of depth; extravagantly. HARVEST-MOON: see under HARVEST.

MOON, THE: the satellite of the earth, revolving round the earth from w. to e. in a period of one *Month* (q.v.), and thus accompanying the earth in its motion round the

sun. As the M., to an observer on the earth, advances more than 13° to the e. daily, while the corresponding advance of the sun is barely 1°, her progress among the stars is much more notable than that of the sun. This rapid angular motion, the continual and regular variation of her illuminated surface, and her large apparent size (nearly equal to that of the sun), have rendered the M. an object of general interest; while her importance as the principal nocturnal substitute for the sun, and her special value to navigators and geographers, in the determination of longitudes (see LATITUDE AND LONGITUDE), have rendered the *lunar theory* the object of thorough investigation.

Phases of the Moon.—The first peculiarity about the M., that strikes a casual observer, is the constant and regular change of her illuminated surface from a thin crescent to a circle, and *vice versa*, and a corresponding change in the time of her appearance above the horizon. These changes depend on the position of the M. relative to the earth and the sun (fig. 1), for it is only the half of the M.

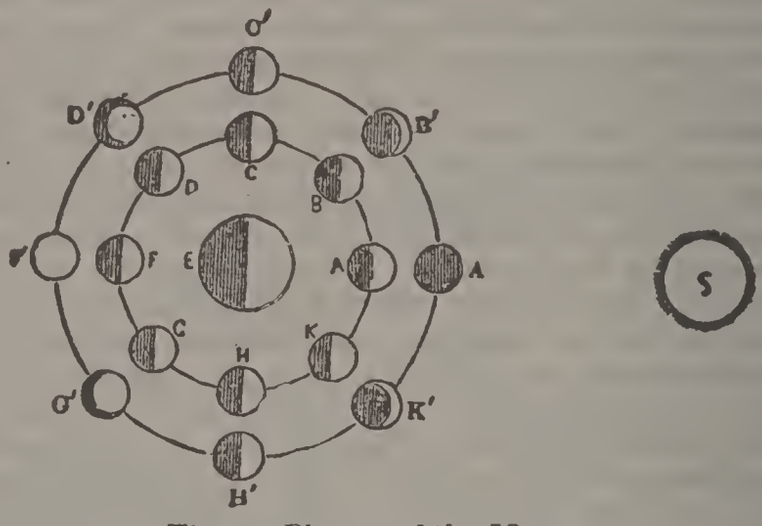


Fig. 1.—Phases of the Moon:

A, B, C, D, F, G, H, K, appearances presented by the moon to an observer situated at the pole of her orbit; A′, B′, C′, D′, F′, G′, H′, K′, 'phases' of the moon at the end of each eighth part of her course; S, position of sun; E, position of earth.

facing the sun that is illuminated by his rays, and the whole of this illuminated portion can be seen from the earth only when the sun, earth, and M. are in a straight line, S, A, E, F (the *line of syzygies*), and the earth is between the sun and M. When the M. is in the line of syzygies, but between the earth and the sun, no part of her illuminated disk can be seen from the earth, A′. In the former case, the M. is said to be *full*, and in the latter, *new*. A few hours after 'new moon,' the M. appears a little *east* of the sun as a thin crescent, with the horns pointing toward the *east;* and as she increases her angular distance from the sun at the rate of about 12° daily, the crescent of light becomes broader, till, after the lapse of a little more than seven days, at which time she is 90° in advance of the sun, she presents the appearance of a semicircle of light, C′. The M. is then said to have completed her *first quarter*. Continuing her course, she

becomes 'Gibbous' (q.v.); and, at the 15th or 16th day from new moon, attains a position 180° in advance of the sun, and now presents the appearance known as *full moon*, E′. From this point she begins to approach the sun, again appearing gibbous, and, after a third period of more than seven days, reaches a point 90° west of him, and enters her *last quarter*, H′. Here, again, she appears as a semicircle of light, the illuminated portion being that which was not illuminated at the end of the first quarter. The M., now rapidly approaching the sun, resumes the crescent form, but this time with the horns pointing *westward*, the crescent becoming thinner and

Fig. 2.—Crescent Moon.

thinner, till the M. reaches the position of new moon, and disappears. From 'full moon' to 'new moon,' the M. is said to be *waning;* and from 'new moon' to 'full moon,' *waxing.* The earth as seen from the M. presents similar phases, and has, consequently, at the time of new moon, the appearance of a round illuminated disk, and at full moon is invisible. This explains the peculiar phenomenon, occasionally observed when the moon is near the sun (either before or after new moon), of the part of the M.'s face which is unilluminated by the sun appearing faintly visible, owing to the reflection upon it of strong earth-light. This phenomenon is designated by the Scottish peasantry as 'the new mune wi' the auld mune in her airms.' At new moon, the M., of course, comes above the horizon about the same time as the sun, and sets with him, but rises each day about 50 minutes later than on the day previous, and at the end of the first quarter rises at midday and sets at midnight, continuing to lag behind the sun. When at the full, she rises about sunset and sets about sunrise, and at the commencement of her last quarter she rises at midnight and sets at midday.

Distance and Magnitude.—From repeated observations of the M.'s horizontal *Parallax* (q.v.), and of the occultations by her of the fixed stars, her mean distance * from the earth has been estimated at 237,600 m.; and as her angular diameter averages 31′ 26″, her actual diameter is 2,153 m., or a little less than $\frac{3}{11}$ths of the earth's diameter. Her volume is therefore about $\frac{1}{49}$th of that of the earth, and, her density being only ·577 (that of the earth being taken as unity), her mass is only $\frac{1}{88}$th of the earth's mass; consequently, the force of gravity at her surface is so much less than it is at the surface of the earth, that a body which weighs 1,000 lbs. here would at the M. weigh only 163 lbs.

Orbit.—The M. revolves round the earth in an elliptic orbit, with the earth in the focus; the eccentricity of the ellipse being equal to ·05491 of half its major axis, or more than $3\frac{1}{4}$ times that of the earth's orbit. The plane of her orbit does not coincide with the ecliptic, but is inclined to it at an angle of 5° 8′ 47·9″, and intersects it in two opposite points, called the *Nodes* (q.v.). The point at which the M. is nearest to the earth is called her *perigee*, and that at which she is furthest from it her *apogee*, and the line joining these two points is called the *line of apsides*. Were the M.'s orbit a true ellipse, which, owing to various irregularities known as *perturbations*, it is not, the *lunar theory* would be exceedingly simple; but these perturbations, which, in the case of the planets, produce a sensible variation in their orbit only after many revolutions, cause, in the case of the M., a distinct and well-marked deviation from her previous course in a single revolution. The retrogradation of her nodes along the ecliptic causes a continual change in the plane of her orbit, so that if, during one revolution round the earth, she occults certain stars, at the next revolution she will pass to one side of them, and will remove further and further from them in each successive revolution. A little consideration will show that, by this continual change of her orbit, the M. will, in course of time, pass over, or occult, every star within 5° 24′ 30″ of the ecliptic. The motion of the nodes is so rapid that they perform a complete circuit of the orbit in 6793·39 mean solar days, or 18·6 years. Another important change in the M.'s orbit is the revolution of the line of apsides, by which the perigee and apogee are continually changing their position relative to the earth and sun. This revolution is more than twice as rapid as that of the nodes, being performed in 3232·57 mean solar days, or 8·85 solar years. For the nature and origin of this motion, common to all the heavenly bodies, see Perturbations (q.v.). Its effect upon the M. is to produce a variation in her distance from the earth, independent of that produced by her elliptic motion

* When the M. is at the *perigee*, she is within 225,000 m., and, when at the *apogee*, more than 251,000 m. from the earth; her angular diameter as measured from the earth consequently varies from 28′ 45″ to 33′ 30″, and for a particular day is greatest when she is on the meridian, as in this case she is nearer to the spectator by about 4,000 m. than when she is on the horizon.

Eclipses.—As the M. in her course passes the sun at the commencement of every (synodic) month, and by the middle of the month has placed the earth between herself and the sun, it is evident that, if she moved in the plane of the ecliptic, there would be either a *total* or an *annular eclipse of the sun* at the commencement, and a *total eclipse of the moon* in the middle of every month. The inclination of her orbit, allowing her to pass the sun 5° 9′ to the n. or s. of his track, prevents such a frequent occurrence of eclipses. If the M., when in conjunction, is at either of her nodal points, and at the same time near her perigee, a total eclipse of the sun takes place; but if near her apogee, the eclipse is only annular, for at that time her apparent diameter is less than the sun's. If, also, at her conjunction, her latitude n. or s. is less than the sum of her semi-diameter and of that of the sun, a *partial* eclipse takes place, and is greater the nearer the M. is to her node. These partial eclipses are seldom seen from all parts of the earth's illuminated surface, but are confined to a portion of it, greater or less according to the extent of the eclipse. Lunar eclipses, which occur when the M. is in opposition (i.e., at full moon), are seen equally from all parts of the earth's surface turned toward her. The conical shadow of the earth, projected into space on the side opposite to the sun, is in length equal to about $3\frac{3}{5}$ times the M.'s distance, and a section of it at the M.'s distance is 1° 23′ in diameter. If, then, the M., which is never more than $33\frac{1}{2}'$ in diameter, happens to be at or near her node, a *total* eclipse will take place, and in no case can it be *annular*, as is sometimes the case with those of the sun. Even during total eclipses, the M. is seldom quite invisible, but generally shines with a faint copper-colored light. See ECLIPSE.

Rotation.—The M., like all other satellites, as far as known, revolves round her own axis in precisely the same time that she revolves round the earth; she thus presents always the same face to us; consequently, though her comparative proximity has enabled us to become better acquainted with her surface than with that of any other heavenly body, our knowledge is confined to one-half of her surface, with the slight exception of the knowledge obtained from her *Libration* (q.v. under LIBRATE). To the inhabitants of the side of the M. next the earth—if the M. could have inhabitants, which is very improbable—the earth would appear as a luminary about 2° in diameter, immovably fixed in their sky, or at least changing its position only to the extent due to the M.'s libration. The earth would thus seem to them to have a disk about 15 times larger than that of the sun.

Physical Features.—The surface of the M., as seen from the earth, presents a most irregular grouping of light and shade (fig. 3). The dark portions were named by the earlier astronomers as seas, lakes, etc., and still retain these names, though there is strong evidence against the supposition that the M. is at least that portion of it

presented to us, contains any water. The brighter parts of the M. are mountainous, as is proved by their casting shadows when the sun's rays fall upon them obliquely, also by the ragged appearance presented by the interior illuminated border of the M., shown in fig. 2, an appearance which can be satisfactorily accounted for only on the supposition that the surface of the M. is not level, in which case the higher portions will be illuminated some time before the light reaches the level parts; and it is observed that, as the illumination proceeds, bright spots start up in advance of it, and, when the M. is on the wane, these same spots continue to shine some time after the surrounding surface is immersed in gloom. The mountains occur either singly, when they are generally of a circular form, and are called *craters;* or in groups, mostly annular, and forming a sort of wall in-

Fig. 3.—The Moon.
Copied, by permission, from De la Rue's Photograph.

closing a deep depression or plain, in which are one or more conical mountains. Some of the craters are 8 or 10 m. in diameter, and some of the walled plains measure more than 100 m. across. The principal mountain range is the Apennines, which crosses the surface from n.e. to s.w., and attains, according to some authorities, an altitude of about 20,000 ft., though Sir John Herschel gives about 2 miles as the probable limit of elevation above the M.'s surface. The heights are estimated from a micrometric measurement of the length of their shadows, a method not, in this case, susceptible of much accuracy. The M. everywhere presents traces of volcanic agency, but no active volcanoes have yet been discovered, nor is there any sign of recent volcanic action Seen through the telescope, she presents a bleak, des

olate appearance, without indications of animal or vegetable existence. She appears devoid of an atmosphere; or, if one exists, it must be of exceeding rarity.

The influence of the M. in causing *Tides* (q.v.) has long been known, and there is some reason for supposing that she produces a similar effect on the atmosphere, combining with other causes in the generation of winds. Those winds which prevail about the time of new and full moon, and at the vernal and autumnal equinoxes, are particularly ascribed to her influence. On the supposition that the M. might affect organic nature, also, experiments were instituted by Mead, Hoffmann, and others; but no certain results were attained. The periodicity which has often been noticed in certain diseases, especially in insanity (hence called *lunacy*), was long supposed to have some connection with lunar influence, and this opinion is held to some extent at the present day. The chemical effects of the M.'s rays are, so far as it is at present known, feeble, though in particular instances they exhibit an *actinism* as powerful as that of the sun. Decomposition of animal matter takes place more rapidly in moonshine than in darkness, and the M.'s rays, when concentrated, have a sensible effect on the thermometer.

The best map of the M. is the large and accurate one of MM. Baer and Mädler, presenting a minutely detailed picture of her visible surface; the map is 3 ft. in diameter. See, further, PERTURBATIONS: LIBRATION, under LIBRATE: NODES: EVECTION: METONIC CYCLE: TABLES: LUNAR: ETC.

Superstitions regarding the Moon.—The M. was anciently an object of worship, and even in the 17th c. she was supposed, by the common people of England, to exercise great influence over human affairs. The times for killing animals for food, gathering herbs, cutting down wood for fuel, sowing seeds of various kinds, all were regulated by the 'age' of the M., and these set periods were considered to be a necessary part of practical knowledge, and ignorance or neglect of them to be infallibly productive of loss. There were similarly defined periods for taking particular medicines and attempting the cure of particular diseases. Many such superstitions prevailed till a recent period in the Highlands of Scotland, favorable or unfavorable consequences from any occurrence being predicted according to the age of the M. at the time it happened. Throughout Scotland, the waning M. was considered to have an evil influence, and full or new moon to be the most auspicious season for commencing any enterprise. The same opinion was held in Scandinavia and Germany, and the history of all nations teems with similar superstitions. See ECLIPSE.

In the Edda, we read that 'Mundilföri had two children—a son, Mâni (moon), and a daughter, Sôl (sun);' and in German the M. is masculine and the sun feminine to this day. It was the same in A.S.; though modern English has in this matter followed the classic myth-

ology, in which Phœbus and Sol are gods, and Selene, Luna, and Diana are goddesses; Grimm (*Deutsche Mythologie*, p. 666) quotes an old invocation to the 'New Moon, gracious lord' (Neuer Mond, holder herr), for increase of wealth; and down to recent times the German people were fond of speaking of 'frau sonne' and 'herr mond' ('lady sun' and 'lord moon'). The same inversion (as it appears to us) of gender is found among the Lithuanians and Arabians, and even the ancient Mexican Meztle (moon) was masculine. Among the Slaves, according to Grimm, the moon is masculine, a star feminine, and the sun neuter. In Hindu mythology, also, the M.—Chandra or Soma—is a male deity, represented by one myth as the son of the patriarch Atri, who procreated him from his eyes; but by another, as arising from the milk-sea when it was churned by the gods for the attainment of the beverage of immortality. His wives are the 27 daughters of the patriarch Daksha, known as the nymphs of the lunar constellations. By one of them, Rohin'î, he had a son Budha (not to be confounded with Buddha), regent of the planet Mercury, who begot, from Ilâ, a son, Purûravas, who became ancestor of a royal family, hence called the lunar dynasty.—The M. is generally represented as wearing white garments, with a mace in one hand, and riding in a chariot drawn by ten horses or antelopes. The animal sacred to him is the hare (the Hindus believing that an outline like that of a hare is visible on the M.); and the plants under his special patronage are a certain variety of the lotus, which flowers when the M. rises, and the Soma plant, or *Asclepias acida*. Thus, in the Vishn'u-Purân'a, the M. is described as the receptacle of the beverage of immortality, with which it is replenished by the sun, for the sustenance of the gods, the Manes (q.v.), men, animals, and vegetables.

MOON, MOUNTAINS OF THE: supposed range of lofty summits in central Africa, which, from ancient times, have given rise to curious geographical hypotheses. Ptolemy, and, until lately, many of the ablest geographers, supposed that a very high chain of mountains crossed the continent of Africa from e. to w.; and they have continued to shift these mountains from one latitude to another, ranging from 10° n. to 10° s., but still within nearly the same meridional bounds. Dr. Beke, from his own researches and a minute study of the geography of e. Africa, propounded the theory that the so-called Mountains of the M. run from n. to s. parallel to the coast of Zanzibar, instead of from e. to w.; forming a continuation of the great Abyssinian table-land, and embracing the snow-capped mountains of Kenia and Kilimandjaro, which have an altitude of 20,000 ft. The mass of mountains discovered by Captain Speke 1858, round the head of Lake Tanganyika, was considered by him, both from its crescent form and its position, to be part of the Mountains of the M. of Ptolemy; but mountains of this height (6,000 to 10,000 ft.) could never be snow-clad so near the equator.

MOONEY, *mô'nĭ*, JAMES: American ethnologist: b. Richmond, Ind., 1861, Feb. 10. He was educated in the public schools, engaged for a time in teaching and in 1879 entered a newspaper office. He continued the study of Indian ethnology which had fascinated him from boyhood and in 1885 became a member of the Bureau of American Ethnology at Washington. He has made a series of investigations covering the southern and western Indian tribes and prepared the government Indian exhibits for the Chicago, Nashville, Omaha, and St. Louis expositions. He has published: *Medical Mythology of Ireland* (1887); *Holiday Customs of Ireland* (1890); *The Ghost-Dance Religion and the Sioux Outbreak of 1890* (1892-3); *Calendar History of the Kiowa Indians* (1898); *Myths of the Cherokees;* etc.

MOONEY, JOHN ALOYSIUS: American author: b. New York 1843, May 20; d. Hurricane Mountain, Adirondack Mountains, 1903, July 26. He was graduated from St. Francis Xavier's College in 1850, and in 1889 received from his alma mater the degree of LL.D. His works were chiefly philosophical, historical, and theological, and appeared first in monthly and quarterly periodicals in America and Europe. Among them are: *Giordano Bruno; Art and Artists* (1886); *Professor Janssen and Other Modern German Historians* (1887); *Antonio Franchi* (1890); *Rosmini and Gioberti* (1892); *Joan of Arc; Law and Liberty in Mediæval Spain; Biography of Archbishop Corrigan* (1903); and many others.

MOON'EYE: a fish of the small family *Hyodontidæ,* related to the herrings, and sometimes called toothed herrings. They inhabit the rivers and lakes of the interior of North America, and are elegant, silvery, large-eyed fish, 8 to 12 inches long, extraordinarily well supplied with teeth, and voracious. 'They are eager biters, and take indiscriminately the feathered lures, small spoons, grasshoppers, grubs and other natural baits.' In Canada they afford much sport in fly-casting, and repeatedly leap into the air when hooked, like trout. The principal species called mooneye is *Hyodon tergisus;* the more northerly one, called toothed herring and la quèche (Canada), is *H. alosoides.* Neither is good for food.

The 'Mooneye cisco' is a small whitefish (*Argyrosomus hoyi*), related to the lake herring.

MOON'FISH: any of the compressed ovate highly silvery fishes of the genera *Selene* and *Vomer,* including small tropical forms allied to the pompanos. One greenish species (*Vomer setipinnis*) is well known in New York Bay and markets as a pan-fish, sometimes called blunt-nosed shiner. More widely recognized is the look-down or horse-head (*Selene vomer*), which reaches a length of two feet, and is regarded along the South Atlantic coast as one of the best of food-fishes; it also occurs along the western coast of Mexico and Central

America, as do certain other species. It has a rhomboidal outline, with the hind-head greatly elevated, the line of the profile almost equal to the length of the body; and the dorsal and ventral fins prolonged into streamers. Consult Jordan and Evermann, *Food and Game Fishes* (1902).

MOONGA, or Moogha. See Silkworm.

MOONJAH, *môn'ja,* or Munjah, *mûn'ja,* or Moonyah, *môn'ya* (*Saccharum Munja*): grass of the same genus with the sugar-cane, native of India, the leaves of which afford a useful fibre, of which ropes are made. The moonjah grows in vast abundance in the neighborhood of the Ganges, Indus, and other rivers. Its fibre is very tough and strong. No proper trial seems yet to have been made of the qualities of the Moonjah fibre, more carefully prepared; but considering the facility with which it could be obtained in any desirable quantity, it deserves attention.—Very similar to the moonjah is the Sara or Shur of Bengal (*Saccharum Sara*), another species of the same genus, the leaves of which are employed in the same way.

MOONSHEE, n. *môn'shē,* or Munshee, n. *mŭn'shē* [Ar. *munshi,* a writer]: a Mohammedan professor or teacher of languages—so called in the E. Indies; a Mussulman interpreter or scribe.

MOON'SHINER: a term applied in the United States, and especially in the southern and western states, to makers of illicit whisky, and other spirituous liquors. Moonshine stills are frequently raided by the secret service officers. Of late years the business has been largely confined to the Tennessee and Kentucky mountain regions.

MOON'WORT: a popular name for a fern (*Botrychium virginianum*) of the natural order *Ophioglossaceæ,* and also for various species of *Lunaria* of the natural order *Cruciferæ.* The former is the most popular of its genus, being readily grown in partial shade and with no special treatment; the latter are also readily cultivated under ordinary garden conditions and are popular because of their showy flowers, but more especially because of their large, flat pods which are used in winter decorations. One of their popular names, honesty, is suggested by visibleness of the seeds through the pods. *Lunaria annua,* especially its variegated variety, is the most valuable species.

MOOR, n. *môr* [Icel. *mor,* peat, turf, moor; *myri,* a marsh: Dut. *moer,* a bleak swamp or marsh: Sw. *myra,* a moorland]: an extensive tract of waste land, covered with patches of heath, and having a poor light soil, sometimes marshy and peaty. Moor'ish, a. *-ĭsh,* marshy; fenny. Moor'y, a. *-ĭ,* sterile; marshy. Moor-buzzard, a moor-bird. Moor-fowl, or Red Grouse (see Moor-fowl, below). Moor-game, grouse (q.v.), ptarmigan

(q.v.), and other birds found on moors. MOOR-HEN, or WATER-HEN (see GALLINULE). MOOR'LAND, n. heath-covered land. MOOR'STONE, n. granite found on the surface of a moor. THE MOORS, great tracts of moorland and hills where game is preserved for sporting.

MOOR, n. *môr* [L. *Maurus*, an inhabitant of the eastern part of Africa—from Gr. *mauros*, moorish, black: Bohem. *maur*, coal-dust: F. *Maure* or *More*, a Moor]: a native of n. Africa—called by the ancient Romans *Mauritānia*, from the color of the people, the word meaning literally 'country of the dark-complexioned people'; one of the people from Africa, of Arabic descent or followers of Mohammed, the Arabian prophet, who conquered Spain in the 8th century (see MOORS). MOOR'ISH, a. *-ĭsh*, pert. to the people called MOORS.

MOOR, v. *môr* [Sp. *amarrar;* F. *amarrer*, to fasten, to moor: Dut. *marren*, to tie, to moor a ship: comp. Gael. *amar*, a chain or cable: also L. *mora*, delay]: to confine or make fast a ship, by means of cables or chains and anchors, in a particular station; to be confined to a particular station, as a ship. MOOR'ING, imp.: N. the act of securing a ship to one position, or alongside a landing-place. Also, a fastening to retain a ship in a given position: this may be either by her own anchors, or (which is the more common meaning of the term) by fixed and permanent buoy, which, on its part, is anchored to the bottom. A *chain-mooring* is where a strong chain is stretched for some distance on the bottom, being securely anchored or otherwise made fast at each end, and perhaps in intermediate places. Numerous buoys are then floated from it, and it becomes the mooring-ground for many vessels. Chain-moorings are frequent in all large harbors where comparatively small vessels require to ride. MOORED, pp. *môrd*, made fast in a station. MOORAGE, n. *môr'āj*, a place for mooring. MOOR'INGS, n. plu. *-ĭngz*, the anchors or buoys laid in a river or harbor in order that a ship may confine itself to one position; said of a ship lying with more than one anchor out.

MOORE, *mōr*, ALFRED: 1755, May 21—1810, Oct. 15; b. Brunswick county, North Carolina. He was educated at Boston, obtained slight knowledge of the law, was offered a commission in the royal army, but joined the patriots, was captain 1775 in a North Carolina regiment, afterward organized a company of volunteers that rendered excellent service. His property was destroyed by the British. He was elected 1790 attorney-general of the state, applied himself to legal studies, and became eminent in his profession. He was appointed judge 1798, and the following year became associate justice of the U. S. supreme court, which office he resigned 1805 on account of ill-health. He died at Belfont, N. C.

MOORE, BENJAMIN, D.D.: 1748, Oct. 5—1816, Feb. 27; b. Newtown, Long Island. He graduated from Kings

(present Columbia) College 1768, prepared for the ministry, went to England, and 1744 was ordained deacon and priest by the bishop of London. Returning to this country, he was appointed assistant at Trinity Church, New York, and 1800 became rector of Trinity parish. The following year he was elected bishop of the Protestant Episcopal Church of New York. He was president of Columbia College 1801-11, performing also all the duties of his church offices. In 1811 he was disabled by paralysis. He published a few sermons, and a pamphlet in defense of the Episcopal services. A volume of sermons was published after his death, which occurred at Greenwich, N. Y.—His son, CLEMENT CLARKE MOORE, LL.D. (1779, July 15—1863, July 10; b. New York), author of *'Twas the Night before Christmas*, graduated from Columbia College 1798, held various professorships of language and literature nearly 30 years in the Protestant Episcopal Theological Seminary, New York, of which he was a liberal benefactor, and was made professor emeritus 1850. He published a *Hebrew and Greek Lexicon*, a collection of poems, and *George Castriot*. He died at Newport, R. I.

MOORE, CHARLES HERBERT, A.M.: American professor of art: b. New York 1840, April 10. He was educated at Harvard and has been art professor there for many years. He has published *Examples for Elementary Practice in Delineation;* and *The Development and Character of Gothic Architecture* (1889, enlarged ed. 1899). In the latter work, which has been widely circulated among students of architecture, he takes the position, earlier adopted by Viollet le Duc, that English Gothic is wholly a development from a French source, and that the progress of the art in England was always some years behind its French original. His warm advocacy of this view has excited some opposition among English critics. He has also written *Character of Renaissance Architecture* (1905).

MOORE, CHARLES LEONARD: American poet: b. Philadelphia, Pa., 1854, March 16. He was educated in the public schools of Philadelphia, and in 1878-9 was United States consular agent at San Antonio, Brazil. He has published: *Atlas* (1881); *Poems Antique and Modern* (1883); *Book of Day Dreams* (1883); *Banquet of Palacios* (1889); *Odes* (1896); *Ghost of Rosalys* (1900); *The Red Branch Crests—A Trilogy* (1904); etc.

MOORE, DAVID HASTINGS, D.D., LL.D.: American Methodist bishop: b. Athens, Ohio, 1838, Sept. 4. He was graduated from the Ohio University in 1860 and ordained to the ministry in that year, but entered the Federal army at the outbreak of the civil war and remaining in it till the close of the war and attaining the rank of lieutenant-colonel. He has been president of the Cincinnati Wesleyan College and of the Colorado Seminary,

and chancellor of the University of Denver. He was elected bishop in 1900; was stationed in Shanghai, China, in charge of the missions of China, Japan, and Korea, 1900-4; and from 1904-8 was stationed at Portland, Ore.

MOORE, EDWARD, D.D., LITT.D.: English Dante scholar: b. Cardiff. He was educated at Pembroke College, Oxford, where he received high honors and became honorary fellow, and in 1864 became principal of St. Edmund Hall. His early research was on Aristotle, and his editions of the *Ethics* and of the *Poetics* are excellent. But he is much more favorably known for his studies of Dante, and has published: *Time References in the Divina Commedia* (1887; revised, in Italian, 1900); *Textual Criticism of the Divina Commedia* (1889); *Dante and His Early Biographers* (1890); the *Oxford Dante* (complete in one volume, 1894); *Studies in Dante* (1896, 1899, 2 series; 3d series 1903); *Gli Accennial Tempo nella Divina Commedia* (Florence 1900); etc.

MOORE, FRANK FRANKFORT: British novelist and dramatist: b. Limerick, Ireland, 1855, May 15. He was educated at the Royal Academical Institution, Belfast, and has traveled extensively in Africa, India, and South America. From 1876 to 1892 he was art editor of the Belfast *News Letter*. He has since lived in London. Among his novels are: *Sojourners Together* (1875); *Told by the Sea* (1877); *Tre, Pol, and Pen* (1887); *A Grey Eye or So* (1894); *They Call It Love* (1895); *The Jessamy Bride* (1897); *Nell Gwynne* (1900); *The Conscience of Coralie* (1900); *A Nest of Linnets* (1901); *A Damsel or Two* (1902); *Shipmates in Sunshine* (1903); *The World Invisible* (1904); *He Loved but One* (1905); etc. Popular plays by him include *Moth and Flame* (1878); *Broken Fetters* (1881); *Oliver Goldsmith* (1892); *The Discoverer; Kitty Clive* (1895); etc.

MOORE, GEORGE: English author: b. Ireland, 1853. He studied art in London under Luyten, but completed his education in France, and was thoroughly imbued with a Gallic spirit. Apart from a few contributions to periodicals, his first literary work was contained in two volumes of quasi-French verse, *Flowers of Parnassus* (1877) and *Pagan Poems*. With his entry into fiction he allied himself immediately with the French realistic or naturalistic school, as may be seen in *A Mummer's Wife* (1884), a story of the degeneration of a farmer's wife, her elopement with a strolling player, and the sufficiently squalid sequel; in *Mike Fletcher* (1891), in which a gay young Irishman wins a fortune by his wits and his social success, and then swings from his riotous living to remorse and back again, only to commit suicide at the end; or in *Esther Waters* (1894), a detailed sketch of life among the servant class and in a country inn, the theme being the allurements of gambling. *Evelyn Inness* (1898) and its sequel, *Sister Teresa* (1901), are a keen analysis of a

musical and sensuous temperament under the successive influence of social temptation and of convent life. What he exemplified in these novels he stated abstractly but over-eagerly and passionately in *Confessions of a Young Man* (1888) and *Impressions and Opinions* (1890), both urging the dead level of mediocrity or worse in English literature of the day as contrasted with French. His desire to found an English 'Theatre Libre' and his growing conviction that the English stage and English novel were far gone led him to form the Irish Literary Theatre in Dublin and to take a prominent part in the movement styled The Irish Renaissance, a movement of which his *Bending of the Bough* (1900) is one of the most promising dramatic productions. He has also written *Sister Teresa* (1901); *The Untilled Field* (1903); etc.

MOORE, George Foot, a.m., d.d., ll.d.: American Orientalist: b. West Chester, Pa., 1851, Oct. 15. He was graduated at Yale in 1872, and at Union Theological Seminary in 1877. Entering the Presbyterian ministry, he was pastor of the Putnam Presbyterian Church, Zanesville, Ohio, 1878-83, and in the latter year became Hitchcock professor of Hebrew and the history of religions at Andover Theological Seminary, and from 1899 to 1901 was president of the faculty there. Since 1892 he has been professor of biblical literature and the history of religions at Harvard. For some years he edited the *Journal of the American Oriental Society*. He has written: *A Commentary on Judges* (1895); *The Book of Judges*, a translation with notes for the Polychrome Bible (1898); and *The Book of Judges in Hebrew* (1900).

MOORE, George Henry, ll.d.: 1823, Apr. 20; b. Concord, N. H.; d. in New York, 1892, May 5. In early life he assisted his father as librarian of the N. Y. Historical Soc., meanwhile studying at the university, from which he graduated 1843. He retained his position as assistant until 1849, when he succeeded his father as librarian. He became, 1872, superintendent of the Lenox Library, which position he occupied till his death, and he was also a trustee of that institution. To his efforts the N. Y. Historical Soc. largely owes its high position. His published works include *The Treason of Charles Lee, Employment of Negroes in the Revolutionary Army, Notes on the History of Slavery in Massachusetts, History of the Jurisprudence of New York* and *Washington as an Angler.*— His brother, Frank Moore (b. Concord, N. H., 1828, Dec. 17), removed to New York, and in 1869-72 was assistant secretary of legation at Paris during the Franco-Prussian war. He returned to New York and engaged in journalism and authorship. Among works which he edited are *Songs and Ballads of the American Revolution, Cyclopedia of American Eloquence, Lyrics of Loyalty*, and *Songs and Ballads of the Southern People*. His chief work was the *Rebellion Record* (12 vols. 1861-71), a valuable chronicle of the civil war.

MOORE, Harry Humphrey: American artist: b. New York, 1844. He studied under Gérôme at Paris and Fortuny in Madrid, and subsequently made painting tours through Germany, Italy, and as far east as Japan. He has devoted himself to such genre pictures as his two masters excelled in, and his best known works are: *Gypsy Encampment, Granada; Moorish Water-Carrier; Almeh; The Blind Guitar-Player;* and *A Moorish Beggar.*

MOORE, Sir Henry: English colonial governor: b. Vere, Jamaica, 1713; d. 1769. In 1756, he became lieutenant-governor of the island, and until 1762 was practically in control of its affairs. He suppressed the slave insurrection of 1760, and for that service was rewarded with a baronetcy. Appointed governor of New York in 1765, July, he reached there at the outbreak of the Stamp-Act excitement. Public opinion was strongly pronounced against the act, and Moore, yielding to the demands of the colonists, suspended its enforcement. He remained governor until his death.

MOORE, Henry: Irish Wesleyan clergyman: b. near Dublin, 1751; d. 1844. He joined a Methodist class in 1777, began to preach, gave up his trade of wood-carver, opened a school, and in 1779 was appointed by Wesley to the Londonderry circuit. Called later to London, he assisted Wesley (1784-6) as traveling companion and amanuensis, serving again in the same capacities 1788-90. Wesley appointed him one of his three literary executors, and also selected him to become (after Wesley's death) one of 12 ministers in charge of services at the City Road Chapel, London. In 1804, and again in 1823, Moore was president of the Wesleyan Conference. Refusing ordination in the Church of England, he was ordained by Wesley, with two Episcopal clergymen assisting. The proposal of a hierarchy for the Methodist Church was opposed by Moore, who also objected to the scheme for establishing a Methodist theological school, likewise to the proposed acquisition of land by the Methodist body in 1839, when the centenary fund was created. In 1792, with Thomas Coke, he published a *Life of the Rev. John Wesley.* Although the work was authorized by the conference, the third literary executor prevented them from using Wesley's papers in its preparation. With the aid of these a new *Life* was published in 1824-5. Moore also wrote: *A Reply to Considerations on the Separation of the Methodists from the Established Church* (1794); *Thoughts on the Eternal Sonship* (1816); *The Life of Mrs. Mary Fletcher of Madeley* (1817); *A Short Account of Miss Mary Titherington of Liverpool* (1819); *Sermons,* with an autobiography (1830). Consult his life (with the autobiography) by Mrs. Richard Smith (1844).

MOORE, James: American colonial leader: b. probably in Ireland about 1640; d. 1706. He is supposed to have been a son of the Irish rebel Roger Moore, and to have

come to this country about 1665. Settling in South Carolina, he became a leader among those who openly resisted the lords proprietors in their oppressive demands. In 1682, he was made a member of the governor's council, and in 1692 was sent to the assembly. In the latter year the proprietors named him for exclusion from their pardon. Two years later he was again one of the governor's council; that body in 1700 elected him governor; and he filled the executive office until 1793, when Sir Nathaniel Johnson arrived. Appointed by the assembly to lead an expedition for the capture of Saint Augustine, Moore took the town without difficulty, but failed to reduce the fort. Under Governor Johnson he served as attorney-general, and was successful in an expedition against the Apalachee (q.v.). Consult: McCrady, *History of South Carolina Under the Proprietary Government* (1897).

MOORE, James: American colonial officer: b. Charleston, S. C., 1667; d. 1723. He was a son of the James Moore preceding, in whose expeditions against the Indians he participated. In 1713, Gov. Craven appointed him commander of the forces sent to aid the North Carolina colony against the Tuscarora Indians, and two years later served as lieutenant-general of an expedition sent to subdue the Yamasi. In 1719, when Gov. Robert Johnston was deposed, the convention having made an end of the proprietory government, Moore became governor. He was succeeded in 1721 by Francis Nicholson, who was commissioned by the English crown.

MOORE, Jesse Haile: 1817, Apr. 22—1883, July 11; b. St. Clair county, Ill. He graduated 1842 from McKendree College, Lebanon, Ill.; taught school two years; was successively principal of Georgetown Seminary; pastor of Meth. Episc. Church at Shelbyville; principal of Paris, Ky., Seminary; president Quincy, Ill., College; and pastor of a church at Decatur, Ill. He resigned the latter position to enter the army, raised a regiment of volunteers which he commanded in various battles, was made brevet brigadier-general 1865, resumed his clerical duties, was member of congress 1869-73, and U. S. consul at Callao, Peru, 1881, until his death.

MOORE, Sir John: English general: 1761, Nov. 13—1809, Jan. 16; b. Glasgow; eldest son of Dr. John Moore. He entered the army as ensign when only 15 years old, and served with distinction in Corsica, as colonel; in the W. Indies, as brigadier-general; in Ireland during the rebellion of 1798, and in the expedition to Holland, as a general of staff. He was in Egypt with the army under Abercromby, and obtained the order of the Bath for services in command of the reserve. In 1802, Moore served in Sicily and Sweden. In 1808, he was sent with a corps of 10,000 men to strengthen the English army in the Peninsula. He arrived in Mondego Bay, Aug. 19, and was subsequently in chief command. In Oct. he received in-

structions to co-operate with the forces of Spain in the expulsion of the French from the peninsula. He moved his army from Lisbon, with the intention of advancing by Valladolid, to unite with the Spanish general Romana, and threaten the communications between Madrid and France. But the apathy of the Spaniards, and the successes of the French in various parts of the peninsula, soon placed him in a critical position. Yet he had determined to make a bold advance from Salamanca to attack Soult, thus drawing Napoleon from his advance into Andalusia, and bringing the attack upon himself, while the army in Andalusia might have time to reorganize for contest with the French. When the news reached him that Madrid had fallen, and that Napoleon was marching at the head of 70,000 men, to crush his force of only 25,000, Moore began his retreat which has become as famous as though it had been a great victory. In Dec., he began the disastrous march from Astorga to Coruña, nearly 250 m., through a desolate and mountainous country, made almost impassable by snow and rain, and harassed by the enemy. The soldiers suffered intolerable hardships, and arrived at Coruña in great distress. It was impossible to embark without fighting, and Soult was in readiness to attack as soon as the troops should begin to embark. The battle was mainly one of infantry, for the cavalry, after destroying their horses, had gone on board, and the bulk of the artillery, for which the ground was not adapted, had also been withdrawn. 1809, Jan. 16, the French came on in four strong columns, and desperate battle ensued. While animating the 42d regiment in a brilliant charge in an early stage of the action, Moore was struck by a cannon-ball on the left shoulder, and died in the moment of victory. The French were defeated with the loss of 2,000 men; and the funeral obsequies of the deceased soldier were performed with melancholy solemnity just before the embarkation of his troops. The British army in this expedition lost their magazines and 6,000 soldiers. A monument was erected to Moore's memory in St. Paul's Cathedral. There is an adverse military view of his retreat: see Sir Bartle Frere, *Life of the Rt. Hon. J. H. Frere.* But for the view usually held and best substantiated, see Moore's *Life,* by his brother (1833); see also Napier's *Peninsular War,* especially the splendid description, Book iv.

MOORE, JOHN, M.D.: Scottish physician and miscellaneous writer: 1730—1802, Feb. 20; b. Stirling; son of the Rev. Charles Moore, Episcopal clergyman. Educated at the Univ. of Glasgow, he studied medicine and surgery in that city, and in Holland, London, and Paris; and began practice in Glasgow. After five years on the continent, he settled in London 1778. In 1779, he published *A View of Society and Manners in France, Switzerland, and Germany* (Lond. 2 vols. 8vo); *A View of Society and Manners in Italy* (2 vols. 8vo 1781); *Medical*

Sketches, in two parts (1786); and 1789, *Zeluco,* a novel (2 vols. 8vo)—the principal, or the most popular of his works. Among his other works are: *A Journal during a Residence in France,* 1792 (2 vols. Lond.); *A View of the Causes and Progress of the French Revolution* (2 vols. Lond. 1795). He also edited a collected edition of Smollett's works, with a life of the author. Moore was a writer of much sagacity and decided literary skill. His novel *Zeluco* is a psychological analysis of a base and passionate reprobate. It greatly impressed the public, and was so reflected in some of Byron's poetry as to give rise to a popular opinion that in *Childe Harold* as a sort of Zeluco, Byron intended some portraiture of himself. Like many other popular opinions this mistake had probably some small basis of fact. Moore died at Richmond in Surrey.

MOORE, JOHN BASSETT, LL.D.: American lawyer, politician, and educator: b. Smyrna, Del., 1860, Dec. 3. He was graduated from the University of Virginia in 1880; was admitted to the bar in 1883; in 1886-91, was 3d, in 1898, 1st, assistant secretary of state; in 1887, was United States secretary in the Samoan conference, in 1887-8 at the fisheries conference; and in 1898 was council and secretary to the United States peace commission at Paris. In 1891, he became professor of international law and diplomacy at Columbia University. He is a recognized authority on international law, and has written *A Treatise on Extradition and Interstate Rendition* (1891); *Kossuth* (1895); *History and Digest of International Arbitrations* (1898); *American Diplomacy, Its Spirit and Achievements* (1905); *Digest of International Law* (8 vols. 1906); etc.

MOORE, MAURICE: American patriot and jurist: b. Brunswick county, N. C.; d. 1777. Having studied for the bar, he acquired a high reputation as a lawyer, was one of the three colonial judges of North Carolina at the time of the revolution, was a member of the provincial congresses at Hillsborough in 1775 and Halifax in 1776, and had a prominent part in framing the constitution of North Carolina. He was one of a committee appointed at the commencement of the revolution to draw up an address to the people of Great Britain on the wrongs of the North American colonies.

MOORE, THOMAS: one of the two most popular poets of his time: 1779, May 28—1852, Feb. 26; b. Dublin; son of a small tradesman, who through the influence of Lord Moira afterward became a barrack-master in the army. At an early age, Moore was placed at a school in which Sheridan had been a pupil. In 1793, he was sent to the Dublin Univ., entering Trinity College as one of the earliest Rom. Cath. students after the prohibition of that sect was removed: there he took the degree B.A. Before entering the university, he had written verses for a Dub-

lin magazine; and while there, he translated the *Odes* of Anacreon, in the hope of obtaining a classical premium, in which, however, he was disappointed. In Dublin, he acquired Italian and French, and being fond of music, he learned to play on the piano—a serviceable accomplishment in his future career.

In 1798, with his translation of Anacreon in his pocket he came to London to study law, and entered himself in the Middle Temple. In 1800, he published his translations, dedicated to George IV., then Prince of Wales. Already he had become the pet of London drawing-rooms. He had a gay temperament, a most winning manner, a wonderful gift of verse-making of a kind suited to society scenes; and he sang his own verses with thrilling effect on princesses and peeresses, and on those who shared the emotions of such noble breasts. In 1802, he produced his *Poetical Works of the Late Thomas Little*—a volume of sweet but licentious verse, which was largely blamed, and very widely read. In 1803, through the influence of Lord Moira, he was appointed to a government post at Bermuda. He arrived there 1804, Jan.; but he sadly felt his banishment from the fashionable society of London, committed his duties into the hands of a deputy, and travelled in America previous to his return to England. His transatlantic experience seems to have cured him of the democratic ideas which he had imbibed in Dublin. On his return to England, he published *Odes and Epistles*, for which he was sharply taken to task in the *Edinburgh Review*. A duel between himself and Jeffrey was the consequence—over which Byron made much mirth—and which resulted absurdly but delightfully in the combatants becoming excellent friends. In 1807, he engaged with Mr. Power to produce the *Irish Melodies*, and on this work he was occupied at intervals till 1834. In 1811, he married, and shortly afterward went to reside in Derbyshire, where, 1813, he produced *The Twopenny Post-bag*, full of brilliant fancy—in which the tropes not only glittered but stung.

As, till this time he had produced nothing but fugitive pieces, he became anxious to emulate his brethren, who wrote long poems, and published in quartos. He fixed on an oriental subject, and the Messrs. Longman agreed to purchase the poem for 3,000 guineas. In 1817, the long-expected *Lalla Rookh* appeared—brilliant as a firefly, and the whole English world applauded. It was melodious verse with elaborate accuracy of oriental costume, coloring, and scenery; but artificial and melodramatic, and utterly lacking in realization of the oriental character. After its publication, he went to Paris, where he wrote *The Fudge Family*, which appeared 1818. At this time, he learned that his deputy in Bermuda had misconducted himself, and that he had become liable for a large sum, which was afterward, however, considerably reduced. Lord Lansdowne paid the claim, and Moore repaid his

Wales, n. England, and Ireland. It feeds on the tender tops of heath, crowberries, bilberries, etc.; and frequently visits the fields of oats and other grain in the vicinity of the moors, particularly when the *stooks* remain long in the field in late and rainy harvests. The moorfowl is not polygamous, and pairs in spring, when the plumage—particularly of the male—assumes a lighter and redder tint. The female lays 8 to 15 eggs. The nest is on the ground, often under shelter of a tuft of heath. The young run about very soon after they are hatched. 'Grouse' remain in *coveys* (broods) from the time they are hatched till late in the autumn, after which they 'pack' or assemble in large bodies.—A cream-colored variety of moorfowl is sometimes found in n. England.—The moorfowl is easily domesticated, and breeds readily in an aviary, if supplied with heath for food.

MOORHEAD, *mōr'hĕd:* Minn., city, county-seat of Clay county; on the Red River of the North, and on the Great Northern and the Northern Pacific railroad; opposite Fargo, N. Dak. It is in a productive farming region in which wheat is one of the great crops. It has flour mills, grain elevators, foundries, machine shops, brick yards, and stock yards. It is a trade centre for a large part of Clay and Norman counties, and ships large quantities of wheat. It is the seat of Concordia College, the Sharp High School, a state normal school, and has public and parish schools. The city owns and operates the electric-light plant and the waterworks. Pop. (1910) 4,840.

MOOR'ISH AR'CHITECTURE. See ARABIAN ARCHITECTURE.

MOORS, *môrz:* people who form the great majority of the population of Barbary. Their appearance indicates their origin, which is a mixture of the Mauri (from whom they derive their name), Numidians, Phœnicians, Romans, and Arabs, who have successively held possession of the country. In consequence, they vary considerably in appearance and character in different parts of Barbary, but all show more or less strongly symptoms of considerable infusion of Arabian blood. They are a well-formed race, with fine oriental features, and a mild and melancholy expression of countenance. They are more friendly and sociable than the Bedouins and Berbers, who inhabit the deserts and mountains; but are inferior to them in mental ability, besides being voluptuous and cruel. They constitute, generally speaking, the tradesmen, artisans, merchants, and agriculturists of Barbary; but many lead a pastoral life. The dress of the Moors consists of a piece of woolen cloth, five ells in length by one and a half in breadth, called a 'haique,' thrown over the shoulders, and fastened round the body; it serves also as a covering by night. This, supplemented by a pair of slippers, a red cap, and a hood, constitutes the sole habiliment of the people generally. In the towns, the 'caftan'

is generally worn over the haique. The Moors employ the Arabic language, but with many corruptions and deviations from the original, and these appear to increase toward the west.

As the Arab conquerors of Spain invaded that country from Africa, where they had largely recruited their forces, they were naturally enough called Moors, and in Spanish history the terms Moors, Saracens, and Arabs are synonymous. From this mixed Moorish-Arab race sprang the *Moriscoes*, who were permitted by Ferdinand the Catholic to remain in Spain after the expulsion of their countrymen, on condition of their embracing Christianity. A cruel persecution, originated by Philip II., drove them to rebellion (1567-70), and many emigrated to Africa 1571; those who remained being, to the number of 500,000, expelled by Philip III. 1610.

The Moors appear in modern history first as allies of the Vandals in their invasion of Africa, and were continually rebelling against the Byzantine emperor. They were next, after a severe struggle, conquered and converted to Mohammedanism by the Arabs 707. In 1091, they were summoned by the Arabs into Spain, to aid in stemming the tide of Christian conquest; and after faithfully supporting the Arab caliph of Cordova, etc., till his dominions fell into the hands of the king of Leon and Castile, they retired, 1238, to Granada, where they founded their kingdom. The Moorish kings of Granada carried on a vigorous, and, at the same time, chivalrous warfare with the kings of Castile; but at length, weakened by internal discord, were compelled to succumb to Ferdinand the Catholic 1492. The Moors, at least that portion of them who refused to adopt Christianity, were then expelled from Spain, and, in revenge, founded, 1518, the piratical states of Algiers and Tunis. Their subsequent history cannot be separated from that of Algiers, Tunis, and Morocco (q.v.); see also BARBARY; BERBERS.

MOORUK, *môr'ûk* (*Casuarius Bennettii*): recently discovered bird of the same genus with the Cassowary (q.v.), of which it was at first regarded as a mere variety; native of the island of New Britain. It is about five ft. in full height, three ft. to the top of the back, is of reddish color, mixed with black, and has a horny plate instead of a helmet-like protuberance on the top of the head. The claw of the inner toe of each foot is very long. It becomes extremely tame and familiar in captivity; may be fed on potatoes, maize, or any similar food; and is apt to prove troublesome by swallowing almost any small article, however indigestible, that it finds.

MOOR'VA. See BOWSTRING HEMP.

MOOSE, n. *môs*, or MOOSE-DEER [an Indian name]: the largest of the deer family. The deer family (*Cervidæ*) embraces not only all the round-horned deer, but also the caribou and moose, whose horns are flattened in a manner

known as 'palmation.' Of this family, the American moose (*Alces americanus*) is the most colossal and also the most picturesque member. The moose of Europe and Asia, there called 'elk' (q.v.), is a much smaller animal. Even in comparison with the largest American elk, our moose is a giant, and it is impossible to appreciate fully the great height and bulk, length of leg and size of antlers of this wonderful creature, without seeing a full-grown bull, either in his native wilds or mounted in a museum.

At nearly every point the species presents a peculiarity. The largest specimens ever shot and measured by naturalists stood from 78 to 84 inches in height at the shoulders. The body is very short in comparison with the great length of the legs, but the depth of the chest is unusually great. The end of the nose is flabby and pendulous, and overhangs the end of the chin by three or four inches. In browsing it is half prehensile, and is of great use in conveying twigs into the mouth. A moose in full winter pelage is covered by a coarse thatch of straw-like hair, from three inches in length on the body to six inches on the neck and shoulders. The color of the hair is purplish-gray, and for an animal which lives so far north, the pelage is exceptionally coarse and open.

The antlers of the moose are strikingly peculiar. The upper two-thirds of the beam is enormously flattened, often to a width of 12 inches or more, and the upper end of this great shovel of solid bone terminates in a row of from six to twelve short points. The single brow-tine is also well palmated, and usually terminates in three or four long points of great strength. Occasionally the main shovel throws out sidewise a palmated spur of striking form and size, and such a head when seen from the front presents a chaotic jumble of tines and palmations. The largest antlers known are in the Field Columbian Museum, and have a spread of 78 inches, greatest width of palmation 16 inches, thickness of palmation $2\frac{1}{8}$ inches, and a total of 34 points. The weight of the antlers and skull is $93\frac{1}{4}$ pounds. At least 25 pairs of antlers are known to exceed 70 inches in spread. The female has no antlers.

The moose is a browsing animal, and its favorite food consists of twigs of the willow, birch, hemlock, spruce, alder, aspen and maple. It also feeds upon moss, and in summer is very fond of wading in ponds and eating the stems and leaves of water-lilies. Because of their very unusual feeding-habits, moose are very difficult to rear in captivity to adult age. About 90 per cent. die of gastro-enteritis before they attain the age of three years. For this reason, the market value of a live moose is far below its rarity and general desirability in a collection. Moose calves are born either singly or in pairs, in May or June. At birth an average specimen stands about 32 inches in height, and is a most grotesque-looking creature.

Its first coat of hair is sandy red, like that of a buffalo calf. At 15 months old, a healthy young animal is about five feet high at the shoulders. The weight of a large adult male moose is between 1,100 and 1,200 pounds, but the maximum weight for the species would probably reach 1,500 pounds.

The range of the moose extends from Nova Scotia and New Brunswick to northern Alaska, a total distance along the axis of distribution of about 4,100 miles. The valley of the Ottawa river and its tributaries yet affords good hunting for moose, and so does northern Manitoba. The species still exists in small numbers in northern Minnesota, and along the western slope of the Rockies as far down as the head of Green river, Wyoming, its southern limit (lat. 43°). Northward, moose are found in British Columbia, Alberta, Athabasca, Yukon and in many portions of Alaska. Those found on the Kenai Peninsula and north of Cook Inlet have the most massive and widespreading antlers to be found, and have even been described as an independent species, under the name of *Alces gigas*.

Everywhere throughout its range, the killing of moose is regulated by law. The open seasons are very short, the number that may be killed by each hunter is limited to one or two males, and the killing of females is forbidden. For the protection of the species in Alaska, congress enacted in 1902 a stringent law, which will at least serve to prevent much of the reckless slaughter that up to that time had been proceeding. But, despite all laws that can be framed and enforced, it is practically certain that the species will be destroyed.

MOOSEHEAD LAKE, *môs'hĕd:* largest of the many beautiful lakes for which the state of Maine is noted. It is between Piscataquis and Somerset counties, in a wild region about 75 m. n. by e. of Augusta. It is about 35 m. long, and its width is from two to twelve m. The water is deep and steamers ply regularly during the summer. The lake, 1,023 ft. above sea-level, is the source of the Kennebec river, which flows from its w. side.

MOOT, v. *môt* [AS. *mot* or *gemot,* an assembly; *motan,* to cite before the *moot,* or court of justice (see MEET)—*lit.,* to discuss in or at a meeting]: to bring forward a subject for discussion; to discuss a question, as in a court of justice; to argue or plead on a supposed cause by way of exercise: ADJ. unsettled; disputable. MOOT'ING, imp. MOOTING, or MOOT'-CASE, n. exercise of pleading a mock cause. MOOT'ED, pp. *-ĕd:* ADJ. debated; disputed. MOOT'ER, n. *-ẽr,* one who moots. MOOT'ABLE, a. *-ă-bl,* capable of being mooted or debated. MOOT-HILL, a mound or height on which justice was anciently administered. MOOT POINT or CASE, a doubtful point; a point which admits of being mooted or argued on opposite sides. MOOT'-HALL, the ancient name for a town-hall.

MOOUZZIN, or MUWAZZIN, and MUEZZIN, n. *mô-ĕd′zĭn* [Ar.]: a Mussulman crier to prayers from a minaret or elsewhere; the call to prayer.

MOP, n. *mŏp* [OF. *mappe*, a napkin—from L. *mappa*, a table-napkin: prov. Eng. *mop*, a napkin, a tuft of grass]: a bunch of strips of cloth or coarse yarn, fastened to a stick or handle, and used for cleaning floors: V. to clean or rub with a mop. MOP′PING, imp. MOPPED, pp. *mŏpt*. MOPPET, n. *mŏp′ĕt*, or MOP′SEY, n. *-sĭ* [dim. of *mop*]: a child's baby made up of rags; a puppet made of rags; a term of fondness applied to little girls. MOP-FAIR, a hiring-fair held a few days after the regular or statute fair, with the view of offering for engagements those male and female servants not previously engaged—*literally*, that they might be *mopped* or wiped up.

MOP, v. *mŏp*, and MOW, v. *mow* [Dut. *moppen;* Low Ger. *mupsen*, to mutter, to grumble: Bav. *muffen*, to mutter]: in *OE.*, to gibber and make faces; to make a wry mouth; to grin in contempt: N. a grimace; a gibbering and making faces; a grin in contempt.

MOPE, v. *mōp* [Dut. *moppen*, to make wry faces, to pout: prov. Eng. *mop*, a fool; *maups*, a silly fellow: comp. prov. Ger. *muffen*, to sulk, to mutter]: to be dull, stupid, or drowsy; to be spiritless or gloomy from discontent; to make spiritless or stupid: N. a person low in spirits. MOPING, imp. *mō′pĭng:* ADJ. inactive and affected with dulness; gloomy. MOPED, pp. *mōpt*. MO′PINGLY, ad. *-lĭ*. MO′PISH, a. *-pĭsh*, dull; stupid; spiritless. MO′PISHLY, ad. *-lĭ*. MO′PISHNESS, n. *-nĕs*, the state of being silent, inactive, and dispirited. IN THE MOPES, sulky; out of temper.

MOPPET and MOPSEY: see under MOP 1.

MOQUEGUA, *mō-kā′gwȧ*. town of Peru, cap. of the province of M., 68 m. n.w. of Tacna. In the province are many large vineyards, which produce great quantities of wine and brandy. Pop. 9,000.

MOQUETTE, n. *mō-kĕt′* [F.]: fine tapestry or Brussels carpet; a kind of Wilton carpet.

MOQUIS, *mō′kēs:* tribe of Indians in the n.w. corner of Arizona, on the Little Colorado and San Juan rivers; discovered 1540 by European explorers, who gave them some sheep and other stock. Missions were established by the Franciscans in the 17th c., but were destroyed in 1680. In 1723 an ineffectual attempt to subjugate the M. was made by the viceroy of Mexico. Through the efforts of a zealous Franciscan, Juan M. Menchero, 1748, several members of the tribe were converted. Since that time they have been peaceable, but have suffered greatly from attacks of the Apaches and Navajos. They live in villages, grow various farm crops, are temperate, and the women are notably virtuous. When the national govt. assumed their control the M. numbered about 8,000. Their numbers were greatly reduced by small-pox 1855–6 and by famine 1866–7; also some removed to New Mexico.

MORA, *mō'ra* [Lat.]: term frequent in Scotch law to denote delay caused by negligence. In other legal systems, the corresponding word is Laches (q.v.).

MORA, n. *mō'ra:* genus of trees of nat. order *Leguminosæ*, sub-order *Cæsalpinieæ*, containing only one known species, *M. excelsa*, discovered by Sir R. Schomburgk, and described by him as the most majestic tree of Guiana. The timber, darker than mahogany, is said to be equal to oak of the finest quality. It is valuable for shipbuilding, and is already a considerable article of commerce, under the name *Mora wood.*

MORACEÆ, *mō-rā'sē-ē:* nat. ord. of exogenous plants, or, according to many botanists, sub-ord. of *Urticeæ* (q.v.). The M. are trees or shrubs with rough leaves and sometimes with climbing stems; they have a milky juice; the flowers are very small; the fruits of many flowers are often inclosed in a succulent receptacle, or the calyx becoming fleshy, all the fruits of a head or spike become combined into one. There are about 200 known species, natives of temperate and tropical climates. Some are valuable for fruit, some for the caoutchouc obtained from their milky juice, and different parts of others are applied to various uses. Among the species are figs, mulberries, Osage orange, fustic, and contrayerva.

MORADABAD, *mō-râ-dâ-bâd'*, or MURADABAD', *mô-:* town of British India, cap. of the dist. of M.; on a slightly elevated ridge between the Ramgunga and the Ganges, 90 m. e.n.e. of Delhi. There is a large jail for native convicts: it is capable of holding 1,800. West of the town, and separated from it by the jail, are the cantonments for the troops, agreeably situated amid luxuriant trees: the chief duty of the troops is to guard the convicts. Pop. (1881) 67,387; (1901) 75,128.

MORAINE, n. *mō-rān'*, MORAINES, n. plu. *mō-rānz'* [F. *moraine*, a moraine: It. *mora*, a heap of stones]: accumulations of stones, earth, or debris, at the edges and terminations of all great glaciers. The masses of rock which, by atmospheric action, are separated from the mountains bounding the valleys along which glaciers flow, find a temporary resting-place on the surface of the ice, at the margin of the glacier, and are carried along with it, but so slowly that they form a continuous line along each margin. These lines of debris are called *lateral moraines.* When two glaciers unite, the two inner moraines unite also, and form one large trail in the middle of the trunk glacier, and this is called a *medial moraine.* A large portion of these rocky fragments at length reaches the end of the glacier, and here the melting ice leaves it for future ages as a huge mound, known as a *terminal moraine.* In N. Amer. the e. part of the great terminal M. marking the southward limit of the ancient icy covering, has been accurately traced: it extends from the highest part of Cape Cod, along the highest part of Long Island, crosses Staten Island and N. J., enters Penn.

near Belvidere, thence passes w. and n.w., crosses the Lehigh river a little n. of Mauch Chunk, enters N. Y., then turns s.w. into Penn. again, and crosses s. Ohio, Ind., and Ill. It has been traced farther w., but not so accurately. See GLACIER.

MORAL, a. *mŏr'ăl* [F. *moral*—from L. *morālĭs*, of or belonging to morals or manners—from *mos* or *mōrem*, manner, way: It. *morale*]: pertaining to or founded on the practices or conduct of men with reference to right and wrong, in their intercourse with others; conformed to right rules; right; just; supported by the evidence of reason or probability; founded on experience, as a moral certainty: N. the lesson taught by a fiction or fable; the practical lesson which a thing is fitted or designed to convey. MOR'ALLY, ad. *-lĭ*, according to the rules of morality; according to the divine law; according to the usual course of things and of human judgment. MORALIZE, v. *mŏr'ăl-īz*, to think, speak, or write on subjects with reference to right and wrong; to make reflections or remarks on good or evil, or on virtue or vice among men; to furnish with a moral. MOR'ALIZING, imp. MOR'ALIZED, pp. *-īzd*. MOR'ALIZER, n. *-ī-zẽr*, or MOR'ALIST, n. *-ăl-ĭst*, one who moralizes; one who teaches the duties of life; also in *OE.*, MOR'ALER, n. MOR'ALIZA'TION, n. *-ī-zā'shŭn*, the act of moralizing; explanation in a moral sense. MORALITY, n. *mō-răl'ĭ-tĭ*, the doctrine or science of man's duties (see ETHICS); the general practice of them; the quality of an action which renders it good or bad; *formerly*, the name of a play (see MYSTERIES AND MIRACLE-PLAYS). MORALS, the practice of the duties of life; course of behavior with respect to others; course of life in regard to good or evil; moral philosophy; ethics (see ETHICS). MORAL AGENT, a person capable of understanding the distinction between right and wrong.

MORAL COURAGE: a term applied in distinction from physical courage. In physical courage the dangers faced and braved are such as involve physical menace to life and limb. When the menace is from social disapprobation and scorn, moral courage is required. A man who endures ridicule for a cherished belief evinces moral courage.

MORALE, n. *mō-râl'* [F. *morale*, ethics—from mid. L. *morālĭs*, moral discourse]: moral condition with respect to zeal, spirit, hope, and confidence; mental state.

MORAL FACULTY: the power of making moral distinctions, i.e., judgments of right and wrong. Like the term moral sense, this term has sometimes been used to designate a supposedly peculiar innate principle distinct from other mental properties. The prevalent view today regards moral judgments as psychologically like any other judgments, but directed to human acts and relationships rather than to physical objects and the like.

MORAL INSANITY: a term no longer used technic-

ally, but employed popularly to designate mental disorders characterized by a failure of the individual to feel the natural moral impulses or a failure to make normal moral judgments. This is illustrated by cases of lack of ordinary parental affection for children, by the inability to see anything wrong in stealing, etc. The state may be unaccompanied by any notable disorder in the merely intellectual aspects of mental process. That is to say, there may be entire freedom from delusions, hallucinations, etc.

MORAL JUDGMENT: an act of judgment directed to an ethical situation. Intellectual judgments are said to deal with facts and coherent relations. Ethical judgments deal with the correspondence of acts with moral standards or values.

MORAL PHILOSOPHY. See Ethics.

MORAL SENSE: used loosely to designate the power possessed by human beings to distinguish between right and wrong. By a certain group of English ethical writers the term was employed to characterize an essentially instinctive or reflex property of human intelligence, whence issued judgments of the moral worth of acts. Shaftesbury (q.v.) and Hutcheson (q.v.) were the most conspicuous of these authors. This view is widely held among people in general, but it is no longer the usual belief cherished by philosophers and psychologists. The moral sense is regarded nowadays as distinctly a development of the individual's personal experience. This is shown most conclusively perhaps by the utter disparity in the moral judgments of primitive peoples when compared with cultivated peoples, but it appears in some degree among the cultivated, where the environment is somewhat different. Stealing and killing are not only right among certain savage races, they are even duties, always with the proviso that they be not practiced upon the members of one's own tribe. Gambling occupies a very different moral place with the rich and the aristocratic of European peoples from that which it has with the people of a New England village. A natural disposition to make judgments of a moral kind is indeed a human trait, but the special content of these judgments varies indefinitely.

MORALITY. See Ethics.

MORAN, *mo-răn'*, Edward: b. Lancashire, Eng., 1829, Aug. 19; d. New York, 1901, June 9. When 15 years of age he came with his parents to Philadelphia, where he studied painting under James Hamilton, the marine artist, and Paul Weber, the landscape painter. His early work exhibited fine taste and a high degree of skill, and his pictures soon became popular. He was in Europe 1862-69, where he studied the great marine paintings; in the latter year he returned to America, and made his home in New York. His chosen field was marine subjects,

and several of his pictures have been engraved. Among his works are *The Bay of New York; The Lord Staying the Waters; The Launch of the Life-Boat;* and *In the Narrows.* His historical series, representing epochs in American seafaring from the *Landing of Leif Ericson* (1001) to *Dewey's Return,* was completed in 1899.

MORAN′, Peter: b. Bolton, Lancashire, Eng., 1842; bro. of Thomas M. He was educated in Philadelphia and worked with a lithographer, but, not liking the business, left it and studied painting under his elder brothers. In 1863 he went to London, where he spent some time in study, after which he took up his residence in Philadelphia. He is a member of the Penn. Acad. of Design. He has made a careful study of etching, and some of his works in this line have become extremely popular. His paintings of animals and of pastoral scenes also are of high rank. Among his famous works are *Twilight, On the Road to Santa Fé, The Challenge, The Thunderstorm, Settled Rain,* and *The Return of the Herd.* The last-named picture was awarded a medal at the centennial exhibition in Philadelphia.

MORAN′, Thomas: b. Bolton, Lancashire, Eng., 1837, Jan. 12. His parents brought him, 1844, to Philadelphia, where he attended the public schools till he was 16 years of age, when he was placed as an apprentice with a wood-engraver. He gave his leisure to painting and drawing, in which he was successful, and at the age of 19 he turned to water-color painting, and his pictures found a ready sale. Four years later he began the study of oil-painting, and 1861 went to England, where he studied the works of the leading artists for about a year. In 1866 he again went abroad. After several years of study and travel in England, France, Switzerland, and Italy, he returned to this country and joined the exploring expedition under Prof. Hayden to the Yellowstone river, where he sketched the *Grand Cañon of the Yellowstone,* and two years later went with Maj. Powell's party to the cañons of the Colorado river, and made sketches of the *Chasm of the Colorado.* His paintings from these sketches were purchased by congress for $10,000 each for the capitol at Washington. From his water-color paintings a series of views in the Yellowstone region has been published, and he has illustrated some of the finest books issued in this country. He is a member of the leading societies, and 1886 was pres. of the Art Guild of New York. Among his famous works are *The Groves Were God's First Temples, A Dream of the Orient, The Azure Cliff, The Open Sea, The Remorse of Cain,* and *The Mountain of the Holy Cross,* which was awarded a medal and diploma at the centennial exhibition 1876.

MORASS, n. *mō-răs′* [Dut. *moeras,* a marsh, a fen: Sw. *moras;* Ger. *morast,* a morass: Icel. *myri,* a marsh—from *mor,* peat, turf: connected with *moor,* a tract of waste

land]: a tract of soft wet moor or bog; fenny ground; a marsh. MORASS'Y, a. *-răs'ĭ*, marshy; fenny; boggy.

MORAT, *mō-rât'* (L. *Moratum*, Ger. *Murten*): town (pop. abt. 2,350) in the canton of Freiburg, Switzerland, on the Lake of Morat, abt. 12 m. from Bern, famous for the victory of the Swiss and their allies over Charles the Bold, Duke of Burgundy, 1476, June 22. The duke, exasperated by his defeat at Grandson, in March, appeared before the gates of Morat with 40,000 men. The Swiss were aided by Strasburg, Basel, Colmar, and other Rhenish cities, and by Duke René of Lorraine, whom the Duke of Burgundy had driven from his possessions; but the superiority of numbers was greatly on the side of the Duke of Burgundy. The assault of the Swiss, however, was very impetuous, and their victory complete; the duke's camp fell into their hands, and he himself escaped only by the swiftness of his horse.

MORATIN, *mō-râ-tēn'*, LEANDRO FERNANDEZ DE: most eminent comic poet of Spain in recent times: 1760, Mar. 10—1828, June 21; b. Madrid; son of Nicolas Fernandez de Moratin, poet of some eminence (1737-80); descended from an old Biscayan family. Moratin learned the trade of a jeweller, by which, after his father's death, he for some time supported himself and his mother. In 1790 appeared his first and best comedy, *El Viejo y la Nina;* followed by *La Comedia nuova, El Baron, La Mogigata,* and *El si de las Niñas.* Prince Godoy conferred several ecclesiastical benefices upon him, though the Inquisition set its evil eye upon the poet. Joseph Bonaparte made him chief royal librarian; but his acceptance of this post alienated him from his countrymen, and after 1814 he took refuge in Paris, where he died. His last work was the *Origenes del Teatro Español.*

MORAVA, *mō-râ'vâ:* chief river of Servia; formed by the union of two head streams—the eastern or Bulgarian Morava, which rises in the mouuntains s. of the new s. frontier of Servia; and the western or Servian Morava, which rises on the w. frontier. The united stream flows n. to the Danube, and has a total length of about 180 miles.

MORA'VA, or properly MARCH (called by the ancients *Marus*): river of Austria, rising on the s. slope of the Schneeberg, on the borders of Prussian Silesia, 3,882 ft. above sea-level. It is the chief river of Moravia, to which it gives its name, and flows south through that crown-land, receiving on the right the Thaya, and falling into the Danube, eight miles above Presburg. In its lower course it forms the boundary between Lower Austria and Hungary. Its length is 184 m., and it is navigable from Göding, more than 60 m. from its mouth.

The Morava is formed by the confluence at Staladsh of its headstreams, the western Morava rising near the southwest boundary, and the southern Morava, with its source in Kossovo, Turkey.

MORAVIA, *mō-rā′vĭ-a* (Ger. *Mähren*): margraviate and crown-land in the Cisleithian portion of the Austrian empire; 48° 40′—50° n. lat., 15° 5′—18° 45′ e. long.; bounded n. by Prussian and Austrian Silesia, e. by Hungary and Galicia, s. by the duchy of Austria, w. by Bohemia; abt. 8,580 sq. m. Pop. (1890) 2,276,870; (1900) 2,437,706.

M. is inclosed and traversed on all sides by mountains, being separated from Silesia by the range of the Sudetes; from Bohemia, by the Moravian chain; and from Hungary, by the Carpathian Mts.; while branches of these various chains intersect the whole country except in the s., where the land consists of extensive plains, about 800 ft. above sea-level. The numerous small rivers of the interior follow a s.e. direction, and fall into the March or Morava (q.v.), from which the country derives its name, and then flow together with the latter into the Danube. The Oder and its affluents, the Elsa and Oppa, rise among the mountains on the n.e., whence their course is soon turned directly away from the Moravian territory. There are few extensive lakes, but numerous ponds and small streams, which abound in fish. The more elevated parts of the country are not fertile, and the climate is severe; but in the mountain valleys and on the southern plains the soil is remarkably rich, and the temperature more genial than in other European countries in the same parallel. M., which ranks as one of the richest of the Austrian dominions, has half of its area in arable land. It yields fine crops of grain, and among natural products grown for exportation are hops, mustard, potatoes, clover-seed, beet-root; and in the south, maize, grapes, chestnuts, and many other of the less hardy fruits and vegetables. The breeding of cattle and sheep, and the making of cheese from sheep's milk, are important industries; in the s. districts of the Hanna (a plain famous for fertility), horses are bred for exportation. Geese and fowls are reared in large numbers for their feathers, and the keeping of bees is very successful. The mineral products include iron, alum, saltpetre, coal, graphite, whetstones, sulphur, vitriol, pipe-clay, marble, and topazes, garnets, and other precious stones.

Manufactures, etc.—The principal manufacture is that of linen and thread, which now has a European reputation; and that of cotton goods at Sternberg. M. has long been noted for the excellence of its cloths, flannels, and other woolen fabrics, and for leather goods. The minerals of M., especially coal and iron, are important, and are extensively wrought. Beet-sugar is largely manufactured. Brünn (q.v.), the cap., is the chief emporium for the manufacturing trade, and Olmütz (q.v.) the principal cattle-mart.

The educational wants of the province are provided for by gymnasia and a great number of schools. The former university at Olmütz is now represented by a theological faculty, and by a large technical institute. The majority of the people belong to the Church of Rome. There are about 50,000 Protestants and 40,000 Jews.

History.—M. was anciently occupied by the Quadi, who, on their migration in the 5th c. to Gaul and Hispania, were replaced first by the Rugii, next by the Heruli and Longobardi, finally by a colony of Slavonians, who, on their settlement in the country, took the name of Moravians, from the river Morava. Charlemagne, who brought the people under nominal subjection after they had spread themselves over a territory greater than the present M., constrained their king, Samoslav, to receive baptism; but Christianity was formally established first in the middle of the 9th c. by Cyril, who must be regarded as the true apostle of the land. M. was made tributary to the German empire before the close of the 9th c.; but in 1029, it was incorporated with Bohemia, after having for a time been a prey to the incursive attacks of its Slavonic and Teutonic neighbors. At the close of the 12th c., M. was erected into a margraviate, and declared a fief of Bohemia, to be held from the crown by the younger branches of the royal house. On the death of Lewis II. at the battle of Mohacz 1526, M., with all the other Bohemian lands, fell to Austria, in accordance with a pre-existing compact of succession between the royal houses. Since then, it has shared the fortunes of the empire, and 1849 it was formally separated from Bohemia, and declared a distinct province and crown-land.

MORAVIAN, a. *mō-rā′vĭ-ān:* pertaining to the country of *Moravia,* or to the Christian sect or society called Moravian Brethren (q.v.) or Moravians: N. one of the sect. MORA′VIANISM, n. *-ĭzm,* the religious system of the Moravians.

MORA′VIAN, or MORA′VIANS; called also UNITED BRETHREN, officially *Unitas Fratrum:* religious denomination, organized, 1457, by followers of John Huss, at Lititz in Bohemia. They increased in that country, Moravia, and Poland to about 200,000, till nearly destroyed by persecution in the 16th and 17th c. In 1722 a small company of refugees, at first only ten persons, received permission from Count Zinzendorf (q.v.) to settle on his estate of Berthelsdorf, Saxony. To this settlement they gave the name of Herrnhut, whence they are commonly known in Germany as Herrnhuter. It rapidly increased, not only by accession of additional Bohemian and Moravian refugees, but of other Christians also, who were attracted by the faith and piety which remarkably prevailed in it. Count Zinzendorf himself, a Lutheran who had been profoundly influenced by Spener's pietism, came with his household to live with the little brotherhood, and joined them; he devoted his whole estate to the propagation of Christianity, and undertook the work of the ministry. The doctrines which they received being those of the Augsburg Confession, it was proposed that they should unite themselves with the Lutheran Church: but difference

of opinion existing, especially on the subject of maintaining proper discipline, and also of the holy communion, it was decided that the *United Brethren*, or *Unitas Fratrum*, as they termed themselves, should remain a distinct denomination; and they adopted an organization of their own essentially like that of their fathers in Bohemia. Strictly, however, they regarded themselves, and the M. in Germany still regard themselves, as a community or congregation within the Evangelical Prot. Church, rather than as a distinct church. Till Zinzendorf's death 1760, he was really their leader, and was recognized by them as *Ordinarius*. After his death, their organization was modified by Synods in 1764 and 69.

The M. are recognized by the state in Germany, as Protestants attached to the Augsburg Confession. They have no symbolical books of their own, though they framed a simple and brief confession of their faith 1727; and a brief statement of principles was emitted by a synod 1775.

The M. profess to be connected with the Apostolic Church, through the Waldenses of former times, by a regular succession of bishops. The bishops, however, exercise no prelatical authority, and their chief peculiar function is that of ordination, of which they alone have the power. Every congregation is governed by a *Board of Elders* and a *Board of Trustees*. The church as a whole is governed by General Synod, which meets—always in Germany—at intervals of ten or twelve years, and is composed of bishops, and of lay and clerical delegates from every Province of the Unity. Between one synod and another, all affairs are managed by a *Unity's Elders' Conference* appointed by the synod.

M. are to some extent scattered among the general population of the countries in which they dwell, as Britain and America; they formerly preferred, where it was possible, to live in communities, or separate societies and in these they carried out some very peculiar parts of their organization, particularly a division into seven *choirs* of children, youths, maidens, unmarried brethren, unmarried sisters, widowers, and widows, each having a separate leader or superintendent. Unmarried brethren, unmarried sisters, widowers, and widows, resided in separate houses; married couples in houses of their own. These divisions no longer exist in America, and are maintained nowhere but in Germany. *Communities* of M. exist in England, Holland, and other countries, but are most numerous in Germany. The most important *communities*, however, are perhaps those in the mission-fields. The Brethren early entered on missionary work, and all the prosperity of their church has been evidently connected with their earnest prosecution of it. This small body of Christians has developed the noblest missionary spirit and the most

complete missionary organization in the modern Christian world. The Unity of Moravian Brethren is indeed one great missionary society. Their first mission was planted, 1732, in the island of St. Thomas, in the W. Indies; the missionaries who went thither expressing their resolution to become slaves, if necessary, to carry out their purpose of preaching Christ. A mission to Greenland, which was eminently successful, and may be said to have made Greenland a Christian country, was commenced 1733. They have interesting missions also in Labrador, Alaska, Thibet, s. Africa, and other heathen countries. The M. have at their mission-stations over 101,000 converts from heathenism. One of the most interesting of their stations is at Sarepta, in the govt. of Saratov, in Russia, by which they are connected with the Tartars and Kalmucks. In all their settlements, the education of the young receives the utmost attention.

The religious services of the M. are conducted with great simplicity. They use a litany on the Lord's Day, together with extemporary prayer. They admit the use of instrumental music. They meet on the last day of the year to bring in the New Year with prayer and other exercises of religion. On Easter morning, they assemble in the burying-ground to celebrate the resurrection of Christ, and to express their confidence concerning the brethren who have died during the year. The death of a brother is made known in the communities and some other settlements by sound of trombones, as for victory.

The first M. who settled in the United States came to Georgia 1735, but on account of the difficulties between the colony and Spain they removed 1740 to Penn., where they founded three towns: Bethlehem, Nazareth, and Lititz. In each of these places, and at some smaller settlements made somewhat later, the peculiar exclusive system which allowed no one outside the church organization to hold real estate was adopted. For about 20 years the church had charge of temporal as well as of spiritual affairs. People having private property retained it: but the lands and shops belonged to and were managed by the church, and it supplied the inhabitants with whatever they needed. A pledge to labor in what seemed to be the most efficient manner possible for the dissemination of the gospel was given by each member. Under this arrangement a large number of devoted Christian men and women were scattered among the colonies and the various Indian tribes, and labored with great success. They were supported by the communities from which they went out. Before the close of the 18th c. the church relinquished temporal functions, but the policy of exclusive ownership of real estate by M. was continued till 1844. By an act of parliament 1749 the British govt. recognized the M. as

an episcopal church, and encouraged the settlement of its members in the N. Amer. colonies. Numerous successful missions were founded among the Indians, of which only a few remain, owing to the violent opposition of the frontiersmen and traders. After the Penn. towns were founded, settlements were made at Salem, N. C., and Hope, N. J., but the latter was soon abandoned. The exclusive policy, while developing great activity in foreign missionary enterprises, hampered the home work of the church, and the general synod at Herrnhut 1857 made important changes in the constitution. The result has been considerable increase of membership in the churches of this faith. The General Synod is a confederation of all the churches of the denomination: it has control of the foreign missionary work, settles all questions of doctrine, and legislates for the Unity in general. To it each of the three home provinces of the *Unitas Fratrum* (the Continental, British, and American) sends nine delegates; the Bohemian and the foreign mission provinces also are represented, and there are a few *ex-officio* members. But in all provincial matters each province is self-governing and has a synod of its own with a full board of officers and ample provision for management of church affairs. The American province has been divided into two districts—the northern with its seat at Bethlehem, Penn., and the southern with its seat at Salem, N. C.; each of which districts has its own synod. Each province maintains church boarding-schools and various domestic missions, in addition to its contributions to the foreign field. At Bethlehem, Penn., there is also a college and theological seminary of the M According to official statistics 1905 there were in the United States 113 organizations, 116 churches, and 16,987 communicant members; value of church property, over $700,000.

In the three home provinces (German, English, American, there were, 1905, in all 27 bishops, nearly 400 presbyters and deacons, and 40,000 communicants. In foreign missions (including 4 in Bohemia and Moravia) were 6 bishops, 388 male and female missionaries, 1,838 native assistants, and 101,260 members. See Histories in German by Cröger (1865), Gindely (1868), and Goll (1882): in French by Bost (1844. English transl.); and in English by Holmes (1825): De Schweinitz (1885), and Hamilton (1900): see also Seifferth's work on the constitution of the church.

MORAY FIRTH, *mŭr'ĭ ferth:* indentation of the n.e. coast of Scotland, on the German Ocean. Its n.w. shore is formed by the counties of Ross and Cromarty, and extends from Kessock Ferry, opposite Inverness, to Tarbet Ness. Its s.e. shore extends from Inverness to Burghead, in Elginshire. The entrance of the firth

between Burghead and Tarbet Ness is 16 m. wide; and from its entrance to Inverness it is 31 m. long.

MORBID, a. *mŏr'bĭd* [F. *morbide*—from L. *morbĭdus*, sickly, diseased—from *morbus*, disease; It. *morbido*]: diseased. MOR'BIDLY, ad. *-lĭ*. MOR'BIDNESS, n. *-nĕs*, and MORBID'ITY, n. *-ĭ-tĭ*, the state of being diseased or unsound; morbid character. MORBID ANATOMY, the study of the alterations in the structure of the body produced by disease.

MOR'BID AP'PETITES: abnormal desires in relation to food. They consist of desires which are, in character, natural and necessary to the animal economy, but becomes unhealthful when excessive and irresistible; e.g., the hunger which attends marasmus, and the thirst which attends diabetes. They may consist further in a craving for articles or objects not in reality deleterious or detrimental, but which do not constitute the ordinary gratification of the appetite, such as the desire for chalk and lime experienced by chlorotic and hysterical women. They may, thirdly, consist in the longings, often complicated with delusions, felt by pregnant women and others, which are injurious, repugnant to nature, and revolting. Georget gives a horrible instance. In such a case, the gross longing may be said to constitute the disease; but there are others in which it is one of many symptoms demonstrating the degradation of the mind under general disease, as when the insane devour garbage, excrement, or swallow grass, hair, stones.

MORBID PSYCHOLOGY. See ABNORMAL PSYCHOLOGY.

MORBIFIC, a. *mŏr-bĭf'ĭk*, or MORBIF'ICAL, a. *-ĭ-kăl* [L. *morbus*, disease; *facĭō*, I make]: causing a disease; generating a sickly state.

MORBIHAN, *mor-bē-ŏng':* maritime dept. in. n.w. France, formed out of ancient Bretagne; 2,615 sq.m. The coast is much indented, and has a multitude of bays, roadsteds, harbors, and islands. The largest island is Belle Isle (q.v.). The dept. is somewhat hilly, but toward the sea the land stretches out in rich plains, interrupted, however, by great tracts of heath and marsh. The climate is mild, but moist. The soil is not well cultivated, but yields sufficient grain for home consumption. The heaths afford fine pasturage, and support great herds of horned cattle, sheep, and horses. The rearing of bees is a source of considerable revenue; as also are the river and coast fisheries. The trade in sardines is very extensive. The want of wood is so great that the peasants are obliged to burn dung extensively. The chief mineral is iron, but there are almost no manufactures. Morbidan is divided into four arrondissements, Vannes, L'Orient, Ploermel, and Pontivy. The chief town is Vannes (q.v.), but the most populous is L'Orient (q.v.). Pop. (1901) 563,468.

MORBILLOUS, a. *mŏr-bĭl′lŭs* [mid. L. *morbilli*, measles: It. *morbilloso*, belonging to the measles—from L. *morbus*, disease]: pertaining to the measles; measly. MORBILLI, n. plu. *mŏr-bĭl′lī*, the measles.

MORCEAU, n. *mŏr-sō′* [F.]: a bit; a morsel.

MORDACIOUS, a. *mŏr-dā′shŭs* [L. *mordax* or *mordācem*, biting or given to bite—from *mordĕō*, I bite: It. *mordace*]: apt to bite; biting; snappish; sarcastic. MORDA′CIOUSLY, ad. *-lĭ*. MORDACITY, n. *mŏr-dăs′ĭ-tĭ* [F. *mordacité*—from L. *mordacĭtātem*, the power of stinging]: the power or quality of biting.

MORDANT, n. *mŏr′dănt* [F. *mordant*, biting—from L. *mordens* or *morden′tem*, biting, consuming]: any substance employed to fix and give permanency or brilliancy to the color produced by dye-stuffs (see DYEING): any adhesive matter by which gold-leaf is made to adhere to a body: ADJ. serving to fix colors; biting; caustic.

MORDAUNT, *mawr′dant*, CHARLES, Earl of Peterborough and Monmouth: abt. 1658–1735, Oct. 25: military and naval commander, one of the most brilliant Englishmen of his time; son of John, Lord Mordaunt. He served as a boy in the navy, and then entered the army. He took part against James II., and was made Earl of Monmouth by William III., succeeding afterward to the earldom of Peterborough, as heir to his uncle. During the war of the Spanish Succession, the English govt. determined to send an expedition to Spain. It was placed under the command of M.; and 1705, June, he arrived in Lisbon with 5,000 Dutch and English soldiers. After taking on board the archduke Charles of Austria, who claimed the Spanish crown, the armament proceeded to Valencia. Here M., with characteristic daring, conceived the idea of making a dash at Madrid, and finishing the war at one blow. He was overruled by the archduke and the Prince of Hesse, and compelled to besiege Barcelona, which was defended on one side by the sea, and on the other by the strong fortifications of Monjuich. By a *coup de main*, he made himself master of Monjuich. Barcelona fell, and M., with a handful of men, entered one of the strongest cities of Europe. He pushed his successes into the interior. Several towns submitted. He marched to Valencia in the depth of winter, and at the head of 1,200 men defeated a Spanish force of 4,000. The Spaniards sent a large army into Catalonia, and a French fleet appeared off Barcelona. M. harassed the enemy's army, and putting himself on board the English squadron, directed a movement which, had it been executed a few hours earlier, would have resulted in the capture of the whole French fleet. The Frenchmen put to sea, and Barcelona was saved. M. again wished to march toward Madrid, but his plan for gaining possession of the capital was once more rejected by Charles. He accordingly left the army in a fit of pique, and went to Italy. In 1707, he returned to Valencia as a volunteer, and gave excellent advice, which was not

followed. He was recalled to England, and from that moment the tide of fortune ran strong against the Austrian cause. Few generals have done so much with means so small, or displayed equal originality or boldness. His fertility and activity of mind were admirably seconded by a most intrepid spirit. His splendid talents, on the other hand, were disfigured by vainglory, and a morbid craving for novelty and excitement. He loved to fly round Europe, and was said to have seen more kings and postilions than any other man of his day. On his return, he made common cause with the tories, to spite the Duke of Marlborough, and received the Garter and other dignities for his services. On the accession of George I., he was appointed commander-in-chief of the naval forces of Great Britain; but was never again employed in active service. He died at Lisbon. His witty, yet affectionate letters to Pope, Swift, Prior, etc., give fine insight into his private character. See Eliot Warburton's *Memoir of Charles Mordaunt, Earl of Peterborough and Monmouth, with Selections from his Correspondence*, 2 vols. (1853). His character has been sketched by Horace Walpole, in his *Catalogue of Royal and Noble Authors;* and with still greater force and picturesqueness by Macaulay.

MORDVINIANS, or MORDVINS (correctly MORDVA, or MORDVS): a people living principally in the middle Volga region of Russia, a division of the Finnish race, for a long period occupants of their present territory. In the 12th c. their homes were invaded by the Russians, who planted many colonies among them, and who now, though living in separate villages, form the principal portion of the populations of the provinces in which the M. are found. There are two branches of M., differing somewhat in features and language. To a great extent they have adopted Russian manners and customs. They are honest and industrious, are good farmers, give much attention to bees, in whose culture they are very successful, and are skilful carpenters. They manufacture considerable wooden-ware. They are nominally Christian, but have many heathen practices. The s. branch, especially, worship various natural objects and offer animal sacrifices. Their present number is about 1,000,000.

MORE, a. *mōr* [AS. *ma*, more; *mara*, greater, more: Gael. *mò*, *mòr*, *mòid*, great, many, much; *mair*, to last: W. *mawr*, much]: comparative degree of *much;* greater in number, quantity, quality, or degree; additional: AD. to a greater degree; a second or another time: N. a greater quantity, number, or degree; other or greater thing, as, we can do no *more*. THE MORE, to a greater degree; for the reason already stated. NO MORE, existing no longer; dead. MUCH MORE, in a greater degree, or with more readiness. MORE AND MORE, with continual increase. MORE THAN PROBABLE, little short of certainty. *Note.*—In *OE.*, *mo* was used in reference to number, *more* to size—see Skeat.

MORE, *môr*, HANNAH: 1745–1833, Sep. 7; b. Stapleton, near Bristol, England; daughter of a village schoolmaster. She wrote verse at an early age; and 1773 she published a pastoral drama, *The Search after Happiness*, and the next year her tragedy, *Regulus*. Under the idea that she was possessed of dramatic talent, she was introduced to Garrick, and through him became acquainted with Dr. Johnson, Burke, and Sir Joshua Reynolds: by these and other literary men she was greatly admired for wit, vivacity, and graceful simplicity of character. Deeply impressed with the importance of religion, she gradually resigned her ambition to shine as a writer for the stage, and after the publication of her *Sacred Dramas* she retired to the country, and busied herself with the composition of works of a more serious and practical cast, the best remembered of which are *Cœlebs in Search of a Wife*, and *The Shepherd of Salisbury Plain*. She died at Clifton. Her writings, though not profound, are fresh, animated, forcible, and impressive, and always in the interest of piety and the simple social moralities. Some of her shorter sketches had immense popularity. In her later years she abounded in philanthropic work.

MORE, Sir THOMAS, Lord Chancellor: 1478, Feb. 7—1535, July 7; b. in Milk Street, London; son of Sir John M., justice of the queen's bench. He was educated at St. Anthony's School, Threadneedle Street; and in his 15th year was placed in the house of Cardinal Morton, Abp. of Canterbury, who used to say of him: 'This child here waiting at the table, whoever shall live to see it, will prove a marvellous man.' Dean Colet, too, was wont to say: 'There was but one wit in England, and that was young Thomas More.' In 1497 M. went to Oxford, where he made the friendship of Erasmus. He then applied himself to the law, and studied first at New Inn, and afterward at Lincoln's Inn. He was appointed reader at Furnival's Inn, where he lectured three years. At the accession of Henry VIII., his professional practice was considerable, and he also held the office of judge of the sheriff's court in the city—his income from these sources being equivalent to £4,000 or £5,000 of present money. He went on several missions abroad for the king, and in 1516 was made a privy councilor: at this time his public life began. He became so great a favorite with Henry VIII., that, in the words of Erasmus, 'the king would scarcely ever suffer the philosopher to quit him.' Henry visited him uninvited at Chelsea, and walked with him by the hour in his garden, 'holding his arm about his neck.' Yet M. had a true insight into Henry's character, for being congratulated on the king's favor by his son-in-law, Roper, he replied: 'If my head would win him a castle in France, when there was war between us, it should not fail to go.' M. is the first person in British history distinguished by the faculty of public speaking, and remarkable for the successful employment of it in parliament against a lavish grant of money to the crown. Being elected speaker of the house

of commons 1523, he vindicated the ancient liberties and privileges of the house against Cardinal Wolsey, who rather feared than liked him. In 1529, when the prosecution was opened against Wolsey, the king delivered the great seal to M. at Greenwich, constituting him lord chancellor, a dignity that had been held generally by ecclesiastics, and had never yet been filled by a common lawyer. When he was seated in his court of chancery, his father, Sir John M., aged nearly 90 years, was the oldest judge of the king's bench. It was a beautiful spectacle to 'see the son ask the blessing of the father every day upon his knees, before he sat upon his own seat.' Unlike the haughty Wolsey, whom no suitor could approach without offerings, M. sat daily in an open hall, that he might receive in person the petitions of the poor. He dispatched the causes so speedily and diligently, that on asking for the next he was told that none remained. Henry in vain endeavored to obtain M.'s authority for his divorce with Catharine of Aragon, and his marriage with Anne Boleyn, on which he had set his heart. As soon as the progress of the marriage was so far advanced that the active co-operation of a chancellor was required, M. obtained leave to resign the great seal. He left his great office a poor man; his income not exceeding £100 a year. When the king 'by no gentleness could win him,' his favor turned to fury. M. refused to take an oath which pledged him to the lawfulness of the king's marriage with Anne Boleyn. He was committed to the Tower, where he remained 13 months; and 1535, May 6, he was brought to trial at Westminster. It has been said that 'no such culprit had stood at any European bar for a thousand years.' He was convicted by the most flagrant perjury and injustice, and sentenced to the savage punishment of beheading for high treason. He suffered death in the Tower, 1535, July 7. In the words of Addison. 'The innocent mirth which had been so conspicuous in his life did not forsake him to the last. When he laid his head on the block, he desired the executioner to wait until he had removed his beard, "for that had never offended his Highness."' His head was placed on London Bridge, but was taken down and preserved by his favorite daughter, the admirable Margaret Roper, the story of whose tenderness and devotion will live as long as the English language endures. His *Utopia* is the conception of an imaginary commonwealth, in which opinions are expressed of great boldness and originality, and especially favorable to freedom of inquiry, even in religion. He, however, wrote against the Lutherans, and corrected the MS. of Henry's answer to Luther. The terseness and liveliness of his sayings, his sweet temper and affectionate disposition, his blameless life, his learning and probity, combine to make a union of perfect simplicity with moral and intellectual greatness, which will forever endear his memory to his countrymen of every sect and party.

MOREA, *mō-rē'a:* name borne by the ancient Peloponnesus (q.v.) since the middle ages, if not from as early as the 4th c. It is usually said to be derived from *morus,* a mulberry—the outline of the peninsula bearing a resemblance to the leaf of that tree; others, however, such as Fallmerayer, trace it back to the Slavic word *more,* the sea, which nearly encircles the Morea. The M. forms the most southern part of the kingdom of Greece, and is divided into the monarchies of Argolis, Corinth, Laconia, Messenia, Arcadia, Achaia, and Elis.

Overrun by the Goths and Vandals, it became a prey, in the second half of the 8th c., to bands of Slavic invaders, who found it wasted by war and pestilence. Gradually, however, these barbarians were subdued and Grecianized by the Byzantine emperors. Nevertheless, the numerous names of places, rivers, etc., of Slavic origin, prove how firmly the Slavs had rooted themselves, and that the Moreotes are far from being pure Greeks. In 1207 the peninsula was conquered by French knights, and Achaia was formed into a principality with all the feudal institutions of the west. After 1261, the Byzantine emperor, Michael VIII. Palæologus, reconquered part of the country; but the principality of Achaia remained in the family of Villehardouin till 1346, when the male line became extinct. Various claimants now arose, and much strife and confusion ensued. At length, 1460, the greater portion of the M. fell into the hands of the Turks, who retained possession of it till the Greek revolution, except 1687–1715, when it was held by the Venetians. The long struggle between the Turks and the Venetians diminished the population so much that it had (1719) only 200,000 inhabitants, and the plagues of 1756 and 82 even reduced it to half this number. After the French Revolution, however, it began to increase; at the outbreak of the War of Independence, 1827, it had reached 300,000, of whom only one-sixth were Turks: pop. 745,000.

MOREAU, *mo-rō',* Jean Victor: greatest general of the French Republic, except Bonaparte: 1763, Aug. 11—1813, Aug. 27; b. Morlaix, in Bretagne; son of an advocate. He was sent to study law at Rennes. He took the side of the Revolution, was chosen to command the battalion of volunteers from Rennes, served under Dumouriez 1793, and evinced such military talent that 1794 he was made a gen. of division. His father, whose political opinions differed from his own, was put to death by the guillotine under the Reign of Terror; and M. hesitated for a moment, but resolved that he could not withdraw from the service of his country. When Pichegru fell under suspicion, the Directory appointed M., in the spring of 1795, to chief command on the Rhine and Moselle. He crossed the Rhine at Kehl, defeated Latour at Rastadt, and the archduke Charles at Ettlingen, and drove the Austrians back to the Danube. But, owing to errors in the plan of the campaign, against which he had in vain remonstrated with the Directory, M. found himself in danger of being cut off from the Rhine, and was com-

pelled to make a desperate effort to regain that river, which he accomplished by a march of 40 days. This retreat, in which he even brought back more than 5,000 prisoners, established his reputation for generalship more than all his previous victories.

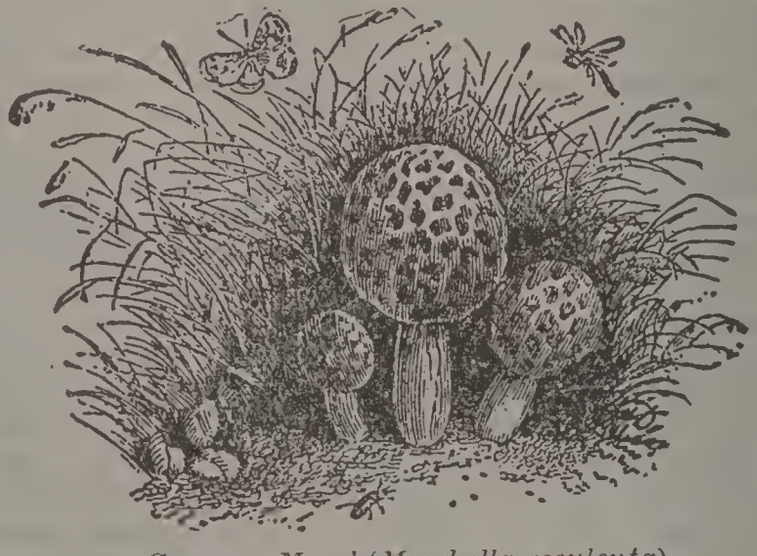
A suspicion of participation in the plots of Pichegru led to his being deprived of his command, after the *coup d'état* of 18th Fructidor. In the following year, he succeeded Schérer in the command of the army in Italy, when it was hard pressed by the Russians and Austrians, M.'s 25,000 men being opposed to 80,000. By a retreat conducted with consummate skill, and in which he even gained victories, he saved the French army from destruction. The Directory, nevertheless, deprived him of the chief command, and gave it to Joubert. But M. remained with the army, and aided Joubert to the utmost; and after that young general's death at Novi, assumed the command, and conducted the defeated troops to France. The noble disinterestedness of M.'s character, his military talent, and his political moderation, induced the party which overthrew the Directory to offer him the dictatorship of France, which he declined, and lent his assistance to Bonaparte on 18th Brumaire. Receiving the command of the army of the Rhine, M. gained victory after victory over the Austrians in the campaign of 1800, and at last won the great and decisive battle of Hohenlinden (q.v.). A strong feeling of mutual distrust now arose between M. and Bonaparte, who sought in vain to win M. to himself; and M.'s splendid country-seat to which he retired, became the gathering-place of the discontented. To this state of affairs, M.'s ambitious wife, who had great influence over him, largely contributed. Bonaparte surrounded him with spies, and ere long he was accused of participation in the plot of Cadoudal (q.v.) and Pichegru against the life of the First Consul. He was arrested, brought to trial, and found guilty, 1804, June 10, though the evidence against him was utterly insufficient. But Bonaparte could not venture on a sentence of death, and a sentence of two years' imprisonment was therefore pronounced, which was commuted into banishment, and M. went to America, where he settled in New Jersey, remaining in America seven years. Regarding with great dissatisfaction the whole of Bonaparte's further career, and influenced by his old comrade Bernadotte, then crown-prince of Sweden, and by his wife's restless spirit, he thought it his duty to France to give his aid to the allies in the campaign of 1813, and leaving the United States in the company of a Russian agent, he landed at Gothenburg, had an interview with Bernadotte, and accompanied the emperor of Russia and the king of Prussia in the march against Dresden, where, as he stood with Emperor Alexander on a height at Raecknitz, a French cannon-ball broke both his legs. Amputation was performed, but he died at Laun in Bohemia.—M. showed his great military genius especially in saving armies in almost hopeless retreats.

MORECAMBE BAY, *mōr'kâm:* inlet of the Irish Sea, on the n.w. coast of England, separating the main portion of Lancashire from the detached portion of Furness; about 10 m. in average breadth, and 16 m. in length. It receives the Leven, the Kent, and the Lune. The depth of water in the bay is never great except in the channels of the rivers; and when the tide is out, the water entirely withdraws for the time, and there is a road, though a dangerous one, across the sands from the vicinity of Lancaster into Furness.

MOREEN, n. *mō-rēn'* [from *mohair:* F. *moiré,* clouded woolen stuff, as moreen]: stout woolen stuff used for curtains, etc. (see MOIRE). *Note.*—MORINA in *OE.* signifies the wool of sick sheep and those dead of the murrain.

MOREL, n. *mō-rĕl'* [F. *morelle*]: a plant, the *Atropa belladonna,* also the *Solanum nigrum,* or petty morel, ord. *Solanăcĕæ.*

MOREL, n. *mŏr'ĕl* [F. *morille;* Ger. *morchel*], (*Morchella*): genus of fungi, of the division *Hymenomycetes,* having a fistular stalk, and a roundish or conical *pileus,* the upper surface of which is divided into an irregular net-work of cells or pits, and bears the *hymenium.* They grow on the ground, and have a more or less agreeable smell and taste. Some are reckoned among esculent fungi, of which the best known is the COMMON M. (*M. esculenta*) of North America, and in parts of middle and



Common Morel (*Morchella esculenta*).

S. Europe. Its stalk is only about an inch high, and it has a roundish, oval, oblong, or conical, yellowish or brown pileus. It is nutritious, and not difficult of digestion; but is used chiefly in sauces and gravies, for its pleasant flavor. It is used either fresh or dried, and is often brought to market dried. It grows in lawns, and among fallen leaves in thinner parts of woods where the soil is light, and makes its appearance in spring. It makes excellent ketchup. In Germany, the M. is highly prized, and as it very often springs up when part of a forest has been burned, the forests of Germany were

sometimes destroyed for its sake, till this practice was restrained by severe penalties. Its cultivation has not been attempted, though probably it would not be difficult. A very similar species is *M. patula,* used in the same way; as is also the BOHEMIAN MOREL (*M. Bohemica*), which has a stem 4-8 inches high, and a thimble-shaped, obtuse, white-margined pileus, with longish narrow pits of many various forms; abundant in Bohemia, and when dried in a baker's oven a considerable article of export. The name morel (*Morchel*) is extended in Germany to some of the edible species of *Helvella* (q.v.).

MOREL or MORELLE, n. *mō-rĕl'* [It. *morello,* of a black color: F. *morillon,* a black grape]: the tree which bears the well-known *morello*-cherry; a cultivated variety of the wild cherry, or *Cerăsus ăvĭŭm,* Ord. *Rosăcĕæ*—much used in making cherry brandy.

MORELIA: Mexico, capital of the state of Michoacan, situated on the line of the National railway, 234 miles west from the city of Mexico, elevation 6,314 feet above the sea, distant by straight line from the nearest point on the Pacific ocean about 140 miles. The city was founded in 1541 and known as Valladolid until 1828, when it was given the name of Morelia in honor of Morelos, the patriot and soldier, who was a native of the city and who rendered important service in the cause of independence. The most notable monument in the city was erected to his memory many years ago, and another (cost $80,000) has been erected. Morelia is in the centre of a productive valley which is almost surrounded by mountains; is on the border of an important sugar producing section, and is surrounded by climatic conditions favorable to the successful cultivation of nearly all grains, fruits and vegetables. Patzcuaro lake, the most beautiful body of water in the republic, is only 39 miles to the southwestward. The city has been the capital of the state since 1821. The College of St. Nicholas, which is claimed to antedate any other in the republic, is the leading educational institution. It was founded in Patzcuaro three centuries ago by the first archbishop of Michoacan, and was originally devoted wholly to professional study. The General Hospital, a noble institution of striking architectural beauty and large capacity, is also the home of the School of Medicine. A charity hospital for women is conducted under the supervision of the archbishop of Michoacan. An academy for young girls occupies an imposing building formerly used as a nunnery. There are several libraries, the principal ones being the state library, which contains a remarkable collection of rare old books of great value, and the libraries of the College of San Nicholas, the Collegio Seminaria, the Military School of Arts and Industries, and the Supreme Court. There are several other smaller ones. The aggregate number of volumes in these libraries is over

70,000. The great cathedral, which is one of the most notable in the republic, was begun in 1640 and completed in 1741 and is a very imposing edifice. A stone aqueduct of exceeding beauty supplies water for domestic purposes. It was built in the latter part of the 18th century by Archbishop Antonio de San Miguel. There is no manufacturing except in a small way, the specialty being a very high class of confectionery made of fruits. Extensive barracks for the use of national troops—both infantry and cavalry—have recently been built a short distance southeast of the city. The financial needs of the community are supplied by the Bank of Michoacan, capital $600,000; branches of the National Bank and the Bank of the State of Mexico, and an agency of the Bank of London and Mexico. Pop. (1906) 40,000.

MORE'LOS Y PARON, José Maria: Mexican insurgent leader (1780-1815). See Matamoros, Mariano.

MOREOVER, ad. *mōr-ō'vėr* [*more*, and *over*]: beyond what has been said; further; besides.

MORESQUE, a. *mō-rĕsk'* [F. *moresque*, Moorish—from It. *moresco*, Moorish—from *Moro*, a Moor]: done after the manner of the Moors; architectural decoration in the Moorish style: N. architecture or decoration after the Moorish style. See Arabesque; Grotesque. Though named after the Moors, it was the invention rather of Byzantine Greeks.

MORETON BAY, *mōr'ton:* body of water on the e. coast of Queensland, Australia; formed inside the islands of Moreton and Stradbroke, the former 23 m., the latter 35 m. in length, and both about 5 m. in greatest breadth. Moreton Bay is 65 m. in length (lat. 27°—27° 55′ s.) by 23 m. in greatest breadth. Its shores are rich in soil, and admirably adapted for agriculture. Its appearance is picturesque and beautiful, with numerous islets, some of them capable of profitable cultivation. Into this bay five navigable rivers, the Arrowsmith, Logan, Brisbane, Pine, and Caboolture pour their waters. The entrance at the north end is practicable at all times for vessels of the largest size; the entrance between Moreton and Stradbroke is narrow, and less safe.

MORETON-BAY CHESTNUT (*Castanospermum Australe*): three of nat. order *Leguminosæ*, sub-order *Papilionaceæ*, native of Queensland, Australia. It attains a height of 70-100 ft., has wide-spreading branches, pinnate leaves, and large racemes of beautiful red and yellow flowers. The pods are six or seven inches in length, and the seeds are in size and quality somewhat like chestnuts.

MORETTO DA BRESCIA, *mō-rĕt'tō dâ brā'chē-â* (his proper name was Alessandro Bonvicino): Italian painter: b. Brescia 1498; d. there 1555. He took Titian as his model, imitating also Palma Vecchio and Romanino, whose styles he developed on independent lines of his

own. He was already famous as an artist at 18, and reckoned a master of pictorial expression, uniting in his coloring tenderness and freshness of flesh tones with a brilliant power of chiaroscuro. His pictures are particularly noted for their bright background, from which his figures stand off with life-like clearness. His numerous religious paintings are full of devotional feeling. Most of these are at his native town of Brescia. In St. Clement's Church in that place is a vast altar piece of his containing a Madonna and Child surrounded by singing angels and the Saints Clement, Dominick, Florian, Catharine, and the Magdalen. He painted an *Assumption* in the Church of San Mazaro. His masterpiece, *The Virgin Appearing to a Shepherd,* is in the church at Paitone, province of Brescia. There are some fine paintings of his in the galleries at Berlin and Frankfort, and in the Brera at Milan; and examples are to be found also in the public galleries of Vienna, St. Petersburg, and Paris. The portraits by this master are equally excellent in conception and power of coloring.

MOREY, *mō'rĭ,* SAMUEL: American inventor: b. Hebron, Conn., 1762, Oct. 23; d. Fairlee, Vt., 1843, April 17. He early evinced a talent for mechanics and engineering and at the time of the opening of the Connecticut river to navigation designed and built the locks at Bellows Falls. On his large estates he built chutes with which to bring his pine logs to the mills years before Napoleon's accomplishment of the feat in the Alps. When but 18 he began his experiments with steam and in 1790 had conceived the idea of propelling boats by means of an improved steam-engine. In 1793 he succeeded in building a boat which attained a speed of 4 miles an hour, and later he improved it and exhibited it in New York with a speed of 5 miles an hour. Morey was often in consultation with Professor Silliman of Yale College as to the value of his inventions, and when Chancellor Robert R. Livingston offered him $7,000 for the patent allowing him to run the boat from North river to Amboy Morey declined. He continued his experiments, encouraged by an offer of $100,000 for an eight-hour steamboat which Livingston was said to have made, and several patents were issued to Morey, indicating that he considered the object almost within his reach. In 1797 he exhibited a greatly improved boat at Philadelphia, and became famous throughout the Middle and New England states. His object seemed practically achieved and arrangements were made for the operation of the steamboats, when misfortune overtook the capitalists who were to promote the enterprise and it failed of operation. Morey is believed to have been the real inventor of the steamboat by many authorities, as Robert Fulton visited him before the exhibition of his own invention.

MOREY LETTER, THE: in American political history

the forgery of a letter during the Garfield-Hancock campaign of 1880. The letter which favored Chinese immigration purported to have been written by Gen. Garfield and to be addressed to H. L. Morey, Lynn, Mass., and was made public in the New York *Truth* 1880, Oct. 20. James A. Garfield, republican candidate for president, denounced the letter as a forgery, but democrats made liberal use of the document, and many votes, it is said, were lost to the republicans through the publication of the letter.

MORGAGNI, Giovanni Battista, *jō-vân'nē bât-tēs'tâ mór-gân'yē:* Italian anatomist: b. Forli 1682, Feb. 25; d. Padua 1771, Dec. 6. After taking his degree of M.D. at Bologna, he went to Venice and ultimately to Padua, where in 1712 he became professor of the theory of physics; and in 1715, as successor of Molinetti, was appointed to the principal anatomical chair in the same institution, which he continued to occupy till his death. He was the first to show the importance of anatomy as being the basis of all other medical studies, and is regarded as the founder of pathological anatomy. His most celebrated works are: *Adversaria Anatomica* (1719); afterward enlarged and published under the title of *Adversaria Omnia* (6 vols., 1741); and particularly his *De Sedibus et Causis Morborum per Anatomen Indagatis* (1761; 6 vols., Leipsic, 1827), which has been translated into various European languages.

MORGAN, *mawr'gan*, Daniel: abt. 1736-1802, July 6; b. Hunterdon county, New Jersey. He removed 1754 to Virginia, and served with distinction in the French and Indian war. About 1762 he married and settled on a farm near Winchester, Va. He was a lieutenant in Pontiac's war, went to Boston as captain of a company to join the continental army 1775; was sent to Quebec, where he was taken prisoner, but was paroled and afterward exchanged. At the request of Washington he was commissioned colonel. He became brigadier-general 1780, commanded at Cowpens, the most brilliant engagement of the Revolution, for which service congress awarded him a gold medal. A violent attack of rheumatism compelled his retirement. In 1795, as major-general, he commanded the force which put down the whisky insurrection in Pennsylvania. He was elected to congress 1796, but on account of ill-health was unable to serve out the term. He died at Winchester, Va.—His nephew, Charles W. Morgan (1790-1853, Jan. 3; b. Virginia), entered the navy 1808. For gallant service 1812 he was given a sword by the Virginia legislature. He rose in rank, and 1841-3 was commander of the squadron in the Mediterranean.

MOR'GAN, Edwin Dennison, LL.D.: 1811, Feb. 8—1883, Feb. 14; b. Washington, Berkshire county, Mass. He went to Hartford, Conn., 1828, and was clerk three years in the wholesale grocery store owned by his uncle,

Nathan Morgan. He then became a partner in the business. The following year he was elected a member of the city council. He removed 1836 to New York, and opened a mercantile establishment, in which he was very successful. He was a member of the state senate 1850-63, and for several years was chairman of the republican national committee. He was governor of New York 1858-62. In 1861 he was placed in command of the military department of New York as major-general of volunteers, and 1863-69 served in the United States senate. He was offered 1865 the position of secretary of the United States treasury, but declined it. He was nominated 1875 by the republicans of New York for United States senator, and the following year for governor. In 1881 he again declined the secretaryship of the United States treasury. He was a liberal benefactor of Williams College and of the Union Theological Seminary. In his will he gave to charitable and religious institutions more than three-quarters of a million dollars. He died in New York.

MOR'GAN, Fort, and Fort Gaines, Capture of: 1864, Aug. 8-23. These forts, opposite each other, guard the entrance to Mobile Bay. The former is on the west end of Mobile Point, where Fort Bowyer formerly stood. The latter is on the east end of Dauphin Island and occupies the site of the old Fort Tombigbee. 1861, Jan., the state authorities of Alabama took possession of these forts, which they held without resistance till the summer of 1864. Meanwhile the city of Mobile and the channel leading thereto has been protected by the construction of elaborate defenses. When an attack seemed imminent batteries were ranged along the channel and a few ships with 22 guns and 470 men were stationed under cover of the guns of Fort Morgan. The attacking fleet, under Admiral Farragut, consisted of 18 ships, with 199 guns and 2,700 men. It passed by the forts 1864, Aug. 5. The *Tecumseh*, leading the fleet, was sunk by a torpedo, and her captain and crew were lost. After a contest of about an hour, in which the attack was aided by a force of 1,500 men under Gen. Granger, stationed on Dauphin Island, the remaining Union ships entered the bay and conquered the Confederate fleet. On Aug. 8 Fort Gaines, with its garrison of 800 men, was taken; Aug. 22 Fort Morgan was almost demolished by bombardment, and it was surrendered on the following day. The next spring the remaining defenses of Mobile, the objective point of attack, were taken, and the city was occupied Apr. 12 by the Union forces.

MORGAN, Sir George Osborne: English politician: b. Gothenburg, Sweden, 1826, May 8; d. 1897. He was graduated at Oxford in 1848, and was admitted to the bar in 1853. In 1868 he became a member of the house of commons and was a staunch supporter of various reform movements, particularly those concerning the En-

glish land laws, religion and education. He was appointed judge-advocate in Gladstone's cabinet in 1880 and in 1886 was under secretary for the colonies. He was made a baronet in 1892 and was leader of the Welsh party in the house of commons until his death.

MORGAN, George Washbourne: American organist: b. Gloucester, England, 1822, April 9; d. Tacoma, Wash., 1892, July 10. When he was 8 he played the entire service at St. Nicholas' Church in Gloucester and at 12 became assistant organist at the cathedral there. He removed in 1853 to New York, where he was organist in several leading churches, and gave recitals in different cities of the United States with marked success. He conducted an annual Lenten service in Chickering Hall, New York, after 1880, and was the author of an Episcopal service, and numerous other compositions.

MORGAN, George Washington: American soldier: b. Washington county, Pa., 1820, Sept. 20; d. Fortress Monroe, Va., 1893, July 27. He left college in 1836 to enlist in the Texas army and fought for the independence of that country as lieutenant and then as captain, when he resigned, and in 1841 entered West Point. In 1843 he left the academy to study law and established a law practice at Mount Vernon, Ohio, in 1845. When the Mexican war broke out he became colonel and served under General Scott with distinction, becoming brigadier-general. He returned to his law practice and in 1856 was sent as United States consul to Marseilles; in 1858 he went from there to Portugal as minister, where he remained until 1861. He entered the army immediately upon his return to the United States, and as brigadier-general was given a command under General Buell. In 1862 he took command of a division of the Army of the Ohio and later was with Sherman at Vicksburg. He was compelled to resign in 1863 on account of failing health. He afterward entered political life and was elected to congress in 1866 and in 1870.

MORGAN, Sir Henry John: Welsh buccaneer, lieutenant-governor of Jamaica: b. Llanrhynny, Glamorganshire, about 1635; d. Jamaica 1688. While a boy he was kidnapped at Bristol and sold to Barbados. Just when he joined the Jamaica buccaneers is uncertain, as there were several Morgans in the marine at Jamaica at the time, but he may have commanded his own ship as early as 1663; a Captain Morgan who sailed from Jamaica in that year taking part in the sack of Vildemos, Truxillo, and Granada (1665-6). In 1666 Morgan sailed under Mansfield to capture Curaçao, and was chosen admiral after Mansfield's death at the hands of the Spanish. In 1668 he captured Puerto Principe to get information of Spanish plans for an attack on Jamaica; then took Porto Bello, Panama, after a sharp siege, during which the buccaneers planted scaling ladders under the cover of cap-

tured priests and nuns, sacked the city, and tortured and maltreated its inhabitants; and in the end of the summer again ravaged Cuba. The next year, 1669, saw Morgan's attack on Maracaibo in March, followed by fresh outrages. The arrival of three Spanish warships did not check Morgan's success, for he set fire to one ship, captured another, and forced the Spaniards to beach and burn the third; he killed almost all his prisoners, recovered 15,000 pieces of eight from the sunken ship, got a ransom for the city from the Spanish forces in the fort, and by a clever maneuver made his escape. Returning to Jamaica he was first reproved for exceeding his powers, and then made commander-in-chief of the entire naval force of Jamaica, so that in 1671 with a stronger force under him than before he approached the city of Panama, which he captured after a thrilling battle, in which the Spanish cavalry was broken by riding into a swamp, and further execution was done by a herd of cattle which the Spaniards intended should break the English ranks but which stampeded the Spanish. This attack and capture of Panama was some time later than the signature of peace between England and Spain, so that Morgan was ordered to England for trial in 1672. Nothing serious came of this, however, possibly because Morgan made free use of his wealth in England, and in November, 1674, he was commissioned lieutenant-governor of Jamaica, where his after life was uneventful and his administration apparently excellent. He can hardly be called a pirate; his cruel, brutal methods were those of his enemies and England's enemies. The primary source for Morgan's life is Exquemeling, *Buccaneers of America* (1648), the work of one of Morgan's followers. Professor J. K. Laughton in the *Dictionary of National Biography,* Vol. XXXIX. (1894), first set straight the chronology of Morgan's life. Popular accounts are Hutcheson, *Sir Henry Morgan* (1890); Pyle, *Buccaneers of America* (1891); Stockton, *Buccaneers and Pirates of Our Coast* (1898); and Brady, *Sir Henry Morgan,* a romance (1902).

MORGAN, James Appleton, A.M., LL.D.: American lawyer and author: b. Portland, Maine, 1850, Oct. 2. He was graduated at Racine College, Wisconsin, in 1867, and at the Columbia Law School in 1869, and in 1871 began the practice of law in New York city, becoming professionally associated with railroad interests. In 1885 he founded the Shakespeare Society of New York, of which from the first he has been president. Its publication, the *Bankside Edition of Shakespeare* (20 vols., 1888-92), was edited by him. In this and in various other works he maintained a theory, based upon collation of the oldest texts, of the composite character of the Shakespeare plays, and of their development under many hands after Shakespeare's original presentation of them. His writings include: *Macaronic Poetry* (1870); *The Law of Lit-*

erature (1874); *Legal Maxims* (1877); *The Shakespearean Myth* (1880); *Shakespeare in Fact and Criticism* (1884); *Some Shakespearean Commentators* (1885); *Digesta Shakespeareana* (1887); *The People and the Railways* (1888); and *The Society and the Fad* (1890).

MORGAN, John Hunt: Confederate general: b. Huntsville, Ala., 1826, June 1; d. New Greenville, Tenn., 1864, Sept. 4. His boyhood was spent in Lexington, Ky., where he was later a manufacturer of bagging. Having served through the Mexican war as lieutenant of cavalry, he was eager to enlist for the civil war, and was appointed captain of volunteers. Soon discovering that he could best serve the Confederacy by adopting guerrilla methods of warfare, he began the series of raids which so annoyed the Union commander. Moving with great celerity, and accompanied by his own telegraph operator, he kept himself acquainted with the plans of the enemy while he misled them regarding his own position. As the result, bridges which they expected to cross were burned, much-needed supply trains were captured and railroad tracks were destroyed. In 1862 he was rewarded by appointment as major-general. In 1863 he projected an extended raid through Kentucky, Ohio and Indiana, but was captured and, with many companions, imprisoned in the Ohio penitentiary. Escaping, he again attempted a raid, but, while sleeping at a farmhouse near Greenville, Tenn., he was surrounded by National troops under Gen. Alvin C. Gillem, and upon attempting to escape was killed. See Morgan's Raid into Indiana and Ohio.

MORGAN, John Pierpont, ll.d.: American financier: b. Hartford, Conn., 1837, April 17. He is the son of J. S. Morgan (q.v.). He was educated at the English High School in Boston, and at the University of Göttingen, Germany. He began his business career in the banking house of Duncan, Sherman & Co., New York city; in 1860 he became agent and attorney in the United States for George Peabody & Co., of London; in 1864 junior member of the banking firm of Dabney, Morgan & Co., and later member of the firm of Drexel, Morgan & Co., of which his father was also a partner. By the death of the older members of the firm he became the head of the latter house, and the firm name was changed to J. P. Morgan & Co. He also controls the firm of J. S. Morgan & Co., of London, and has a partnership in Drexel & Co., of Philadelphia. For many years his chief interest lay in railroad negotiations and combinations, and he has gradually gained control of the New York Central system, the New York, New Haven & Hartford, the Reading, the Erie, the Lehigh Valley, the Southern, the Northern Pacific, the Big Four, and the Chesapeake & Ohio. Shortly after this great railroad consolidation was completed (1901) he succeeded in organizing the United States Steel Corporation, uniting the Carnegie Steel

Works and other large concerns with a capitalization of $1,100,000,000, and dominating the steel industry of the United States. In the same year he bought up a large English shipping line with the evident design of organizing a trust for the control of transatlantic shipping; but did not succeed in completing the consolidation. He is the head of both the anthracite and the soft coal trusts, and has several times been prominent in the settlement of miners' strikes. In 1895 he organized the syndicate which floated the United States bond issue of $62,000,000, for the increase of the gold reserve; and in 1901 secured American subscriptions of $50,000,000 to the British war loan. Probably no other American capitalist is so well known and so thoroughly trusted in Europe as Mr. Morgan; particularly is this true as regards England, and a large majority of English investments in American securities are made through his house; everywhere he is recognized, not merely as a man of vast wealth, but also as a man of unusual organizing and constructive ability. He has given largely to many charities and institutions, particularly to hospitals, churches, and the Trade School in New York, and to Harvard University. He is an enthusiastic yachtsman, was for two years commodore of the New York Yacht Club, and built the yacht *Columbia* which defeated Sir Thomas Lipton's *Shamrock* in the international yacht races.

MORGAN, John Tyler: American lawyer and politician: b. Athens, Tenn., 1824, June 20; d. Washington, D. C., 1907, June 11. He went to Alabama when nine years old, received his education there, was admitted to the bar in 1845, and commenced the practice of his profession. He rapidly gained a high reputation as a lawyer and speaker; was presidential elector in 1860, voting for Breckenridge; and in 1861 was a delegate to the Alabama convention which declared for secession. He enlisted in the Confederate army as a private in 1861; in 1862 raised a regiment in his state, of which he was made colonel; and in 1863 was commissioned brigadier-general and commanded a division under General Johnston. After the war he resumed the practice of law at Selma, Ala., was presidential elector on the democratic ticket in 1876; and in 1877 was elected to the United States senate. He was five times re-elected, in 1882, 1888, 1894, 1900, and 1907; in 1900 there was no opposing candidate and he received the unanimous vote of the Alabama senate and house. He was long recognized as one of the ablest leaders of the democrats in the senate, was a member of the senate committee on foreign relations, and for some years its chairman; in his last term he was chairman of the committee on interoceanic canals; and favored the Nicaragua canal route instead of the Panama, so that November, 1903, he was removed from that post. He was an earnest and able advocate of recognition of Cuban independence and won popularity in all parts

of the country by his eloquent speeches in behalf of Cuba. In 1892 he was appointed by President Harrison one of the board of arbitration on the Bering Sea fisheries; and in 1898 was one of the commission appointed by President McKinley to prepare a system of laws and organize the government for the Hawaiian Islands.

MOR'GAN, Junius Spencer: 1813, Apr. 14—1889, Apr. 8; b. West Springfield (present Holyoke), Mass. He went to Boston when 16 years of age, where he worked about five years. He was then for 18 months with a banking house in New York, after which he was junior partner in a dry-goods house in Hartford. He married 1836 a daughter of John Pierpont. In 1851 he entered into partnership with J. M. Beebe of Boston. The firm, known as J. M. Beebe, Morgan & Co., soon became prominent in the dry-goods line. In 1854, Oct., Morgan became a partner in the banking firm of George Peabody & Co. of London, of which he became the head 1864, when Mr. Peabody retired. The firm name was changed to J. S. Morgan & Co., and under his skilful management the house rapidly grew into one of the leading banking institutions in the world. Morgan was an active member of the Protestant Episcopal Church, and was a liberal benefactor of educational and charitable institutions. The New York Metropolitan Museum of Art received from him 1887 a valuable painting of Sir Joshua Reynolds. During the last three years of his life he resided at Monte Carlo. In 1889 he offered to give $100,000 for a free library in Hartford on condition that $400,000 should be secured from other sources. This amount was obtained about three weeks before he died. His death, which occurred at Monte Carlo, resulted from injuries caused by being thrown from his carriage.

MOR'GAN, Lewis Henry, ll.d.: 1818, Nov. 21—1881, Dec. 17; b. Aurora, N. Y.: 'Father of American Anthropology.' He graduated from Union College 1840, was a lawyer in Rochester 1844-64, but from the time of his graduation gave much time and study to Indian habits, customs, and family relationships. He commenced 1847 a series of *Letters on the Iroquois,* followed by many papers and books on kindred subjects. He prepared schedules which were circulated throughout the civilized world, conducted a large correspondence, and arranged for publication the facts thus obtained. The work was issued by the Smithsonian Institution with the title, *Systems of Consanguinity and Affinity of the Human Family.* Morgan was elected to the New York legislature 1861, and the senate 1868. He was a member of the National Academy of Sciences, and of several other scientific bodies, and was elected 1879 president of the American Association for Advancement of Science. Among his works were *The American Beaver, Ancient Society,* and *Houses and House-Life of the American Aborigines.* He died at Rochester, N. Y.

MORGAN, Matthew Somerville: American artist: b. London 1839, April 27; d. New York 1890, June 2. He studied scene painting, but soon abandoned it to become correspondent and illustrator for the London *News*, afterward studying in Paris, Italy, and Spain, and in 1858 penetrated the interior of Africa on a sketching tour. Returning to London he became joint editor and proprietor of the *Tomahawk*, and his cartoons, which audaciously attacked the aristocracy and royalty, brought him into disfavor. He assisted in the establishment of the London *Fun*, and in 1870 removed to the United States, where he was engaged with Frank Leslie. He managed several theatres in New York, managed the Strobridge Lithograph Company of Cincinnati in 1878-85, and founded in that city the Matt Morgan Pottery Company and the Art Students' League.

MOR'GAN, Lady Sydney (Owenson): abt. 1777-1859; dau. of a theatrical manager named Owenson, who settled in Dublin. It is usually stated that she was born 1786, but as she refused to tell the date of her birth, 'because dates are so cold, false, and erroneous,' the reader of her autobiography may be advised to set the date about 10 years earlier. Her father fell into pecuniary difficulties, and the clever, bold, and lively young woman resolved to support the fortunes of the family, first as governess, then as author. She wrote *The Wild Irish Girl* 1806. A lady-novelist was then rare, and Irish subjects were less hackneyed than they have since become. Sydney Owenson obtained a footing in the household of the Marquis of Abercorn, in whose establishment her future husband (afterward Sir) Thomas Charles Morgan, M.D. (1783-1843; b. England), held the post of private physician. The lord-lieutenant was persuaded to make a knight of Dr. Morgan, and the newly-wedded pair set up for themselves in Dublin. Here she wrote *The O'Donnel.* The opening of the continent 1814 attracted the Morgans to Paris. Lady Morgan obtained admission into the highest society, corresponded with several celebrities, and wrote a work on *France*, which was eagerly received, and vehemently praised and censured by critics of different political opinions. In 1818, the Morgans went to Italy—the wife to sketch manners, scenery, and society, while Sir Charles was to contribute chapters on politics, science, and education. Lady Morgan was received with great hospitality by the Italian nobility, and the foreign visitors at Rome. Her *Italy* appeared 1821, and proved one of the most successful and remunerative of her works. In 1824, the Morgans came to London; and 1825, Lady Morgan began to keep a diary, which contains amusing bits of literary, fashionable, and political gossip. Her reputation as an authoress became obscured, but she continued to the end of her career to assume the twofold character of the lady of fashion and the woman of genius. She succeeded in obtaining from the whig

government a pension of £300 a year, in acknowledgment of her literary merits, and partly, also, in recognition of the unjust and virulent attacks to which she had been subjected for having, in her earlier works, exposed the wrongs of her native country. She continued busy with her pen and her tongue to the last; and died leaving a great mass of correspondence of little intrinsic value, which, with a memoir, her autobiography, and diary, was edited by Hepworth Dixon and published 1862, 2 vols. Her descriptions of high life have much raciness and vigor, and her Irish sketches—the famous 'Jug-day,' in *The O'Briens and the O'Flahertys*, deserving special mention—are perhaps the best account of that rackety, humorous, sentimental existence which was at once the charm and bane of Ireland, and which has but lately passed away.

MORGAN, Thomas J.: American lawyer and socialist leader: b. Birmingham, England, 1847, Oct. 27. He worked at the machinist's trade for 37 years, and has been active in the labor movement since 1875; in 1895 he was graduated from the Chicago Law College, and has since practiced law. He was one of the committee appointed to secure the location of the World's Fair at Chicago; and also represented the labor organizations before a congressional committee, requesting that the fair be open on Sunday. He was for several years a member of the socialist labor party, and in 1891 that party's nominee for mayor of Chicago. At the time of the formation of the social democratic party (later reorganized as the socialist party) he was active in the work of organization, and has since been a prominent member of the party, being secretary of their national campaign committee in 1900, candidate for state's attorney in Cook County, Illinois, in 1900, delegate to the national convention at Indianapolis in 1901, candidate for city attorney in Chicago in 1903, and for judge of the superior court of Cook county, Illinois, in 1903, and again in 1907. He was also one of a committee of 100 selected by the Civic Federation to recommend reforms in Chicago public schools, and presented the socialists' view of the trust before the trust conference held at Chicago.

MORGAN, William: American Freemason, whose death was the immediate cause of the formation of the anti-Masonic party: b. Culpeper county, Va., about 1775; d. possibly near Niagara in 1826. He fought in the defense of New Orleans in 1815; removed to York, Canada, in 1821, where he became a brewer, and whence soon after he moved to Batavia, N. Y.; and in August, 1826, disappeared soon after a rumor had been spread that he was to reveal the secrets of the Masonic order. He was supposed to have been abducted by fellow Masons and drowned in Lake Ontario, but his death was never proved. A corpse found near the mouth of Niagara river was

stated to be his; much political capital was made of this 'proof'; and Thurlow Weed, a leader in the anti-Masonic movement, cynically said that it was 'a good enough Morgan till after election,' a remark that has become proverbial of campaign deceit. Morgan's book, *Illustrations of Freemasonry, by One of the Fraternity Who Has Devoted Thirty Years to the Subject* (1826) roused much less excitement than the story of his death. Consult: Greene, *The Broken Seal* (1870); Morris, *History of the Morgan Affair* (1852); O'Reilly, *American Political Anti-Masonry* (1879).

MORGANATIC, a. *mŏr'găn-ăt'ĭk* [Ger. *morgengabe,* morning-gift—from *morgen,* morning; *gabe,* gift, endowment: Latinized into *morganăticum:* another derivation is from Gothic *morgjan,* to curtail, limit]: called sometimes LEFT-HANDED MARRIAGE: among the feudatories of the Lombards and other branches of the Teutonic race, a name applied to the endowment of a wife, on the morning after marriage, with a limited portion of her husband's fortune; subsequently, a name applied to a marriage between a man of exalted rank and a woman of inferior position, she being, however, entitled only to the *morgengabe,* without partaking of his rank, or transmitting any rights in the inheritance of the husband to her children; left-handed, or irregular, marriage. In present use the word designates a lower sort of matrimonial union, which, as a civil engagement, is completely binding, but fails to confer on the wife the title or estate of her husband, and on the children the full status of legitimacy or right of succession. The members of the German princely houses have for centuries been in the practice of entering into marriages of this kind with their inferiors in rank. Out of this usage has gradually sprung a code of matrimonial law, by which the union of princes with persons of lower rank, in other than morganatic form, involves serious consequences, especially toward the lady. The penalty of death was actually enforced 1435 in the case of the beautiful and unfortunate Agnes Bernauer (q.v.). In the 16th and 17th centuries a fashion began among German princes of taking a morganatic wife in addition to one who possessed the complete matrimonial status—Landgrave Philip of Hesse setting the example with a very qualified disapprobation on the part of the leading Reformers. An energetic attempt was made in the first half of the 18th century by Anton Ulrich, Duke of Saxe-Meiningen, to upset the established practice, and obtain for his morganatic wife the rank of duchess, and for her children the right of succession. In deference to the united opposition of the whole princedom of Germany, the emperor refused the duke's suit, declaring that there could be no marriage in princely families without 'Ebenbürtigkeit,' or equality of birth. In the present century, morganatic marriages are not on the decline among the German reigning houses—one of the best known

and most remarkable instances being the union of the late Archduke John, the 'Reichsverweser' of 1848, with the daughter of the postmaster of Aussee, in Styria, afterward created Countess of Meran. Morganatic marriages are recognized not only among the princely families but among the higher aristocracy of the empire; and in Prussia, even the 'Niedere Adel,' or inferior gentry, may contract unions of this kind.—A sort of left-handed or 'hand-fasted' marriage was recognized in early times in the Highlands of Scotland, and Ireland: the hand-fasted bride could be put away, and a fresh union formed, with the full status of matrimony. Unlike the case of German morganatic marriages, the issue were often accounted legitimate, even to the prejudice of the children of the more regular union that followed. The Royal Marriage Act, 12 Geo. III. c. 11, reduces to a position somewhat like that of morganatic unions every marriage in the royal family of Great Britain not previously approved by the sovereign under the great seal, provided the prince entering into it is under 25 years of age, and every such marriage of a prince above 25 which is disapproved by parliament.

MORGAN CITY: Louisiana, city, port of entry, in St. Mary's parish; on the Atchafalaya Bayou, and on the Southern Pacific railroad; about 70 miles west by south of New Orleans, and 20 miles from the Gulf of Mexico. The place was formerly known as Brashear City. The Atchafalaya Bayou is navigable for steamers of light draught, and as it connects Grand Lake and the Gulf, Morgan City has steamer connections inland for some distance and with the principal Gulf ports. Considerable sugar-cane is cultivated in the country around Morgan City. The chief industrial interests are connected with the cultivation of sugar-cane, rice, and with market gardening, fish, and oysters. It has Oneonta Park, in which are botanical gardens and a fine zoological collection. In 1863, June 23, a Confederate force of 3,000 soldiers under Richard Taylor captured the Federal garrison of about 1,000 soldiers. The Confederates secured property to the amount of $2,000,000, but they soon abandoned the city. and the Federals again took possession. Pop. (1900) 2,332; (1910) 5,477.

MOR'GANFIELD: Kentucky, city, county-seat of Union county; on the Illinois Central railroad; about 30 miles southwest of Evansville, Ind. It is in an agricultural region, in which tobacco is an important product. The principal industrial establishments are tobacco factories, flour mills, carriage factories, brick yards, and lumber mills. It is the seat of St. Vincent's Academy (R. C.). The city owns and operates the waterworks. Pop. 2,200.

MORGAN'S RAID INTO INDIANA AND OHIO: in the middle of June, 1863, Gen. Bragg ordered Gen. John

H. Morgan, with 2,000 picked mounted infantry and four guns, to move from Tennessee into Kentucky, break up the railroad upon which Gen. Rosecrans depended for supplies, capture Louisville, destroy the public works, and return to Tennessee as quickly as possible. Morgan determined to exceed his orders and make a raid north of the Ohio. On July 2, with 2,460 men and four guns, he set out from Burkesville, crossed the Kentucky river in the face of Union troops guarding it, and marched northward, followed by all the Union detachments within immediate call. He passed through Columbia, after a sharp skirmish with about 300 of Wolford's Kentucky cavalry, in which he lost about 40 in killed and wounded, and on the 4th reached Green river at Tebb's Bend, and demanded the surrender of Col. O. H. Moore, who, with about 300 men of the 25th Michigan, was guarding the bridge at that point. Moore replied that the Fourth of July was not a good day to surrender, and was instantly attacked with artillery and musketry. After a hard fight of three hours, in which Moore had 6 killed and 23 wounded, Morgan was repulsed, with a loss of 36 killed and 46 wounded, and drew off, crossing the river below the bridge. On the 5th he defeated and captured the small garrison of Lebanon and marched by Bardstown to Brandenburg, on the Ohio, where he arrived on the morning of the 8th, and seizing two steamboats began crossing his command. His passage was disputed by a gunboat and by militia with a field-piece on the Indiana shore, but by the morning of the 9th his whole command was in Indiana. Twenty-four hours later Gen. Hobson, with 2,500 cavalary and mounted infantry and four guns, crossed the river in pursuit, and for 17 days hung upon Morgan's heels. Indiana and Ohio were aroused and turned out their militia by thousands. After crossing the Ohio, Morgan rode north through Corydon, where he was resisted by militia, who were soon overpowered. He then pushed on to Salem, where he captured nearly 400 militia, then through Lexington and Paris to Vernon, near which place on the evening of the 11th he encountered a stiff resistance from about 1,200 militia under Col. Love. Under cover of darkness he withdrew from Love's front, and pressing on through Dupont and Sumansville, crossed the Indiana line on the 13th to Harrison, Ohio, and concentrated his command preparatory to making his way across the Ohio into Kentucky, detaching parties to burn bridges and confuse the pursuit, and impressing fresh horses. Under cover of a feint on Hamilton he marched by night a few miles north of Cincinnati, moving directly east, closely pursued next day by Hobson, who was marching 40 miles a day, and threatened from all directions by the militia. Turning toward Berlin, where the government had a large number of animals, he was confronted by a small body of militia, under Col. Runkle, lost much precious time in threatening

an attack, drew off, closely followed by Runkle, and after dark of the 18th reached the banks of the Ohio, a short distance above Pomeroy, near Buffington Bar and Blennerhasset's Island, where from the first he had planned to escape. His pursuers were closing in on him from every direction. On the west Hobson was hanging on his rear; Gen. Judah, who had been withdrawn from Kentucky, had landed his division at Portsmouth, and was marching up from the southwest; regiments were coming down the river from Parkersburg, and gunboats patroled the river and watched the fords. Early in the morning of the 19th Morgan endeavored to cross the river, but was speedily checked. He was attacked in the rear by the head of Hobson's column, Judah's cavalry struck him in the flank, and two gunboats opened upon his front. A severe engagement cost him about 120 killed and wounded and more than 700 of his officers and men surrendered, Morgan with the remainder escaping up the river, where he attempted to cross to Belleville by swimming his horses. Three hundred men, under Col. Johnson, had crossed when a gunboat stopped the remainder of the column, Morgan himself returning to the Ohio shore and with about 800 men retreating inland. He had lost all his artillery and trains. He pressed on northeast through Athens and Washington, marching 35 miles a day, burning bridges behind him, with Gen. Shackelford and 500 men close upon his rear and skirmishing with it. Near Salineville on the 26th Shackelford's advance captured 250 men, and later in the day he was intercepted near New Lisbon and Beaver Creek, and surrendered with 364 officers and men. The Union loss in the campaign July 2-26 was 19 killed, 47 wounded and 8 missing. Consult: *Official Records,* Vol. XXIII.; Duke, *History of Morgan's Cavalry;* Senour, *Morgan and His Captors;* The Century Company's *Battles and Leaders of the Civil War,* Vols. III and IV.

MORGANTOWN: West Virginia, city, county-seat of Monongalia county; on the Monongahela river, and on the Baltimore & Ohio and Morgantown & Kingwood railroads; 100 miles south of Pittsburg, near the northern boundary of the state, eight miles south of Mason & Dixon's line; lat. 39° 38′ N.; long. 2° 39′ W. of Washington.

The first settlement was made in 1766 by Nicholas Decker; soon followed by the Morgan family, from whom it takes its name. It was incorporated in 1838 and chartered as a city in 1901. It is in a region noted for its extensive coal fields, and good water-power, which is used for manufacturing. In the vicinity are large forests, oil fields, glass-sand deposits, and limestone. The chief industrial establishments are window glass, tumbler glass, wire glass, and pressed prism glass factories; a mirror factory; foundry works; publishing company; utility works; brick works; and other small manufactories. There is considerable trade in coal, coke,

oil, live-stock, manufactured articles, and agricultural products. The five banks have a combined capital of $510,000, and deposits amounting to $1,500,000. It is the seat of the State University, and of the Military and Agricultural Colleges in connection with the State University. There are good public schools, secondary and elementary. There are a number of good church buildings; the finest is the Methodist Episcopal, a stone building which cost $100,000.

The government is vested in a mayor, recorder, council of 11 members (the mayor and recorder are included in the council), elected by the people of the four wards. Pop. (1900) 1,895; (1910) 9,150.

MORGARTEN, *mor-gâr'tĕn:* mountain slope on the e. margin of Lake Egeri, canton of Zug, Switzerland. It has celebrity as the scene of a great victory won by the Swiss Forest Cantons over the Austrians 1315, Nov. 15. The Swiss, who had command both of the narrow pass which wound between Morgarten Hill and the lake, and of the adjoining heights, numbered only 1,400 men, while the Austrians amounted to 15,000, and were led by Duke Leopold, brother of the German emperor. When the Austrian troops had fairly entered the pass, those of the Swiss posted on the rocks above hurled down great masses of stone, which threw the enemy's cavalry into confusion, besides killing immense numbers of them. Their comrades who held the pass, taking advantage of the disorder, now charged the Austrians repeatedly, and utterly routed them. Only a few escaped, among whom was Duke Leopold.

MORGAY, n. *mŏr'gā* [W. *morgi,* the sea-dog]: the small spotted dog-fish; the hound-fish or bounce, found in the Mediterranean.

MORGHEN, *mor'gĕn,* Raffaello Sanzio, Cavaliere: famous engraver: 1758, June 19—1833, Apr. 8; b. Naples. His first instructor in the art of engraving was his father, who, according to some, was a German, or the son of a German. The indications of talent that Morghen gave were such as to induce his father to place him under Volpato at Rome. His progress then became very marked. Raphael's celebrated figures, in the Vatican, of *Poetry* and *Theology* were engraved by him 1781; and he afterward produced a succession of engravings of a very high class from many of the masterpieces of art; e.g., his prints from Raphael's *Madonna della Seggiola;* the *Madonna del Sacco,* by Andrea del Sarto; the *Transfiguration,* by Raphael; the *Duke of Moncado,* by Van Dyck; and by his burin, Da Vinci's *Last Supper,* notwithstanding its decay, has been rendered with such consummate skill as to lessen the regret felt for the evanescent condition of the original work. He accepted an invitation from the Grand Duke to reside at Florence, with a pension of 400 scudi, and a free residence, under

condition of keeping a public school; and received marked attentions from the emperor Napoleon, to whom he dedicated his engraving from the *Transfiguration*. Morghen married Volpato's daughter 1781. He died at Florence. His Life, with a portrait, and a catalogue of his works, was published by his pupil, Niccolo Palmarino. From this work it appears that he engraved 73 portraits, 47 religious and 44 historical and mythological pieces, 24 views and landscapes, and 13 vignettes, crests, etc.—201 in all. The works of Morghen will always hold a prominent place in the history of engraving. About the middle of the 18th century, Strange had added a new feature to the art, by introducing, in a remarkable way, what is technically called by engravers 'color,' or the art of producing, by management and variety of line, a texture or quality that compensates to some extent for the want of the actual colors in a picture. This influenced the style of Volpato, Cunego, and other Italian engravers of the period, who imitated, though with little success, the brilliancy produced by Strange. Morghen, however, went far beyond these Italian engravers, for in his works he united much that was good in the engravings of Strange with a more correct and a purer style of drawing.

MORGUE, n. *mŏrg* [F. *morgue*]: place in cities or towns where the bodies of persons found dead are deposited temporarily, in order to be identified and claimed by their friends. The French word denoted the inner wicket of a prison, at which persons accused or condemned are kept for some time, so that the jailers and turnkeys may examine them at leisure, in order to recognize them when occasion requires. Hence the application of the word to a certain building (*La Morgue*) in the 'City' (*La Cité*) of Paris, at the extremity of the *Ile de la Cité*, just behind the cathedral of Notre Dame, where the dead bodies of persons unknown, found either in the river (Seine) or in the streets, are exposed to public view for three days. The corpses are put under a glass case, on a sloping slab of black marble. When a corpse is recognized it is handed over to the relatives or friends of the deceased on payment of costs and dues—otherwise it is interred at the expense of the city. The number of bodies yearly exposed in the Paris *Morgue* is about 300, of which five-sixths are those of males.—There are morgues in the large American cities: established in Boston 1851, New York 1866, Brooklyn 1870, Chicago 1872, St. Louis 1874, etc.

MORI: family name of the feudal princes who have long ruled a portion of Japan. In the 15th and 16th centuries the Mori had control of 11 provinces, but afterward their power was reduced and their dominion was limited to the two provinces of Suwo and Nagato (or Choshiu). Among their duties was the guardianship of the Straits of Shimonoseki. The fiefs were held by three cadet families. The Dutch early established schools in

Nagato, and from this province many native students were sent to Europe and America before the government adopted a liberal policy in regard to foreigners. In the revolution 1868, the Mori and their retainers were actively engaged against the government. The Mori crest is formed of three balls over which is placed a transverse bar.

MORI (or MAURI), ARINORI: born about 1848, in the province of Satsuma, Japan; d. 1889, Feb. 11. He was one of the first natives educated in England. After studying two years in London, he returned to Japan, entered the national legislature, and favored a progressive course. He was the leader of the movement to do away with the ancient custom of a privileged class wearing two swords. He was the first minister ever sent by Japan to a foreign country, receiving appointment 1871 as *chargé d'affaires* at Washington, D. C. While here he made a careful study of American educational systems. In 1873 he returned to Japan; the following year he was married, and 1879 was appointed minister to Great Britain. He prepared two books in English for the use of his countrymen, and was a leader in efforts to secure religious liberty and elevate the condition of woman.

MORI'AH, MOUNT. See JERUSALEM.

MORIBUND, a. *mŏr'ĭ-bŭnd* [L. *moribundus*, dying—from *mori*, to die: F. *moribond*]: in a state of dying.

MORIL: same as MOREL 2, which see.

MORILLON, n. *mŏr'ĭl-ŏn* [F.]: name among fowlers for the female or the immature male of the golden-eye duck. The name is applied also to a fine black grape. See MOREL 3.

MORINGA, n. *mō-rĭng'gă* [Mal. *murunggi*]: a strong-scented tree which yields the ben-nut and ben-oil, a native of Egypt and the E. Indies; the *Moringa pterygosper'ma* or horse-radish tree, ord. *Moringācĕæ*.

MORION, n. *mŏr'ĭ-ŭn* [F. *morion*—from Sp. *morrion:* It. *morione*, a kind of helmet—from Sp. *morra*, the crown of the head; *morro*, anything round]: iron or steel head-piece worn by a man-at-arms in the days when armor was used. It was a sort of helmet; but was distinguished from the helmets of the knights and esquires in having neither visor nor beaver. It was copied by the Spaniards from the Moors. Under the Norman laws, every yeoman between certain ages was bound to keep his morion ready for service.—Morion is also a name given by lapidaries to rock crystal of a brownish black or charcoal-black tint.

MORISCO, n. *mō-rĭs'kō* [Sp. *morisco*—from *Moro*, a Moor]: anything Moorish; the Moorish language; moresque; a dance. MORIS'COES, n. plu. *-kōz*, a name given to the Moors who remained in Spain after the taking of Granada 1492. See MOORS.

MOR'ISON, GEORGE SHATTUCK: American civil engineer: b. Bedford, Mass., 1842, Dec. 19; d. New York

1903, July 1. He was graduated from Harvard in 1863 and was admitted to the bar of New York in 1865. In 1867-73 he was engaged in engineering in Kansas, Michigan, and Indiana, and then returned to New York, which he thereafter made his headquarters. He was an expert on railroad conditions and made himself famous as a bridge builder; constructing five bridges across the Missouri and ten over the Mississippi, the greatest of these being the bridge at Memphis, Tenn., which has a single truss span of 790 feet. He was a valuable member of the Isthmian canal commission appointed by President McKinley in 1898.

MORISON, James Augustus Cotter: English biographer and essayist: b. London 1832; d. 1888, Feb. 26. He was educated at Oxford, was a positivist in philosophy, and one of the founders of the *Fortnightly Review*. He wrote *Life and Times of St. Bernard* (3d ed. 1877); lives of Gibbon, Macaulay, and Madame de Maintenon; *The Service of Man: An Essay toward the Religion of the Future* (2d ed. 1887); etc.

MORISON, Robert, M.D.: botanist; b. Aberdeen, Scotland; d. 1683. Having borne arms as a royalist in the civil wars, he retired to France about 1650, and became superintendent of the garden formed at Blois by Gaston, Duke of Orleans. After the Restoration, he was appointed by Charles II. one of his physicians and 'botanist royal,' and became professor of botany at Oxford. His great work is *Plantarum Historia Universalis Oxoniensis* (2 vols. 1676-99).

MORISO'NIANISM: popular name for the distinctive tenets of the Evangelical Union (q.v.), Scotland, but never accepted by that religious body. The system of doctrine is fully enunciated in an authoritative document entitled *Doctrinal Declaration*, issued by the Evangelical Union Conference of 1858—not as a fixed or authoritative creed, but merely as a testimony to their distinctive faith. Being a recoil from the dominant Calvinism of Scotland, it is of Arminian type, but without any latitudinarian savor. The charge of Pelagianism often urged against it is indignantly repudiated by Evangelical Unionists, and, with reference to some modern aspects of Calvinism, is by them spiritedly retorted. It is a form of doctrine, in fact, which very nearly corresponds to the type of Evangelical Arminianism among the British and Amer. Wesleyans, and the Cumberland Presbyterians in the United States. Like that, it originated in an element of revival; and now, after the lapse of a generation, these same tenets are largely insisted on by revival preachers of the orthodox bodies at the present day. This coincidence is explained by the need, felt in all efforts to bring men to religious decision, to give prominence to the universalities of gospel grace, the duty of immediate yielding to Christ in faith, and the importance

of peace with God as a subjective condition of the Christian life. It was these, and especially the doctrine that Christ died as an atonement in the plenary sense for all men—'taking away the sin of the world'—which led to the separation, 1841, of the Rev. James Morison of Kilmarnock (now Dr. Morison of Glasgow) from the United Secession Church, and of three other ministers at subsequent synods, and to the formation by them of the Evangelical Union 1843, May. A theological academy was at the same time instituted, presided over by Dr. Morison, at which 20 to 30 students annually receive training for the ministry. Many of these have gone to England, and some have attained good positions among the Congregationalists there. The Evangelical Union now embraces about 90 ministers and churches, all congregational in polity, though many have ruling elders. In brief, the most distinctive doctrine of Evangelical Unionists is that which they prominently exhibit as the three great universalities of gospel grace—namely, the Divine Father loves all, the Divine Saviour died for all, the Divine Spirit strives for the salvation of all. Believing in the entire freedom of the human will, they hold predestination to be conditional. On such doctrines as the Trinity, Atonement, Justification, and the like, they symbolize with other bodies known as Evangelical.

MORLAND, *môr'land*, GEORGE: English painter: b. London 1763, June 26; d. there 1804, Oct. 29. His father, himself a painter, gave the boy a severe early training in art, and his proficiency was such that his productions found ready purchasers, while at 16 he exhibited in the Royal Academy and became famous as a copyist of Dutch interiors. Soon after he rebelled against the strict discipline of his father's house, and entered upon a career of dissipation, supporting himself, meanwhile, by the pictures which he painted with amazing facility. In 1786 he took up his residence at Kensal Green, where he changed his mode of life and married the sister of James Ward, the animal painter, and William Ward, the engraver. Here he worked hard, and the moral subjects, after the manner of Hogarth, which he favored at this period, were engraved, and became very popular. Soon again, however, he drifted back into his old habits, and, as his pictures were eagerly sought by the dealers, he was able for some time to carry on his reckless career. At length, in 1799, he was arrested for debt, but 'obtained the rules of the bench,' took a house within the bounds, and continued to practice his art up to his release in 1802. The art of Morland is characterized by a picturesque representation of rural life in its homelier aspects, his rustic story being always happily conceived and skilfully told. He is one of the first genre and animal painters of the English school. Six of his best paintings are in the Kensington Museum, and the *Farmhouse Stable* in the National Gallery is sometimes considered

his masterpiece. The New York Historical Society possesses his *Old English Sportsman* and *Dogs Fighting*, and the Metropolitan Museum the *Midday Meal* and *Weary Warfarers*. Consult Dawe, *Life of Morland* (1807).

MORLAND, Sir SAMUEL: English inventor and diplomat: b. Sulhampstead-Banister, Berks, 1625; d. Hammersmith 1695, Dec. 30. He studied at Winchester School and at Magdalen College, Cambridge; was a tutor at Cambridge in Pepys' day; and about 1650 devoted himself to diplomacy. Cromwell sent him to Sweden in 1653, and in 1655 to the Duke of Savoy to protest against the persecution of the Waldensians, in whose history he became deeply but none too intelligently interested, his *History of the Evangelical Churches of the Valley of Piedmont* (1658) being full of exaggeration and misinformation. He was close in the secrets of Cromwell, and upon learning of Sir Richard Willis' plot against Charles revealed it to that prince; and was rewarded after the Restoration with a baronetcy. He then withdrew from public life, devoted himself to mechanical experiments, improved the fire pump or fire engine, the lineal predecessor of the steam engine, and invented a speaking trumpet and other nautical instruments. He wrote on cryptography, mathematics, and mechanics.

MORLEY, EDWARD WILLIAMS, A.M., LL.D.: American chemist: b. Newark, N. J., 1838. He was graduated from Williams College, Williamstown, Mass., in 1860. He was elected to the chair of chemistry in Western Reserve College, Hudson, Ohio (later Adelbert College, Clevelaud), in 1869 and retained the office till 1906. He was also professor of chemistry at Cleveland Medical College in 1873-88, and he has been connected with various scientific societies. He is the inventor of an improved apparatus for gas analysis and has published: *Atomic Weight of Oxygen* (1895).

MORLEY, HENRY: English author: b. Hatton Garden, London, 1822, Sept. 15; d. Carisbrooke, Isle of Wight, 1894, May 14. Educated at King's College (London), he practiced medicine in Somerset and Shropshire; taught at Manchester; was editorially connected with Dickens' periodicals, *Household Words* and *All the Year Round;* was for a time editor-in-chief of the *Examiner;* and in 1865 was appointed professor of literature in University College, London. In 1878 he received a similar chair at Queen's College, London; and in 1882-90 was principal of University Hall, London. As a popular lecturer on literature he was much in demand. He edited *Morley's Universal Library* (1883-8); *Cassell's National Library* (1886-90); and the *Carisbrooke Library* (1889-91); published biographies of Palissy (1852), Jerome Cardan (1854), and *Cornelius Agrippa* (1856); and wrote *English Writers* (1887 et seq.), and a smaller work on the same

subject, *First Sketch of English Literature* (1873), a much-used manual.

MORLEY, John, M.A., F.R.S., LL.D., D.C.L: English writer and statesman: b. Blackburn, Lancashire, 1838, Dec. 24. He studied at Cheltenham College and at Oxford in Lincoln College; was called to the bar in 1859; wrote for the *Saturday Review;* edited the *Literary Review* (later the *Parthenon*); was editor of the *Fortnightly Review* (1867-82); of the *Pall Mall Gazette* (1880-3), and of *Macmillan's Magazine* (1883-5). He contested Blackburn unsuccessfully in 1869 and Westminster in 1880, but at a by-election in 1883 was chosen to the house of commons largely because of his Irish policy (which favored a colonial type of government for Ireland), and was re-elected in 1886, in 1892 (in spite of the powerful opposition of a labor candidate backed by Keir Hardie), in 1896 (having been defeated in 1895), and in 1901. He was chief-secretary for Ireland in Gladstone's brief ministry of 1886, and in the Gladstone-Rosebery cabinet of 1892-5. In 1905 he became secretary of state for India in the liberal cabinet of Campbell-Bannerman. Upon the premier's resignation in 1908 Morley resigned, but the newly appointed premier, Asquith, in April, reappointed him to the same office, and he was also raised to the peerage. Since 1894 Morley has been a trustee of the British Museum. He did much for the reunion of the liberal party in 1887, being one of the famous committee of five. An able parliamentarian, he is better known as editor, biographer, essayist, and has written: *Edmund Burke* (1867); *Critical Miscellanies,* two series (1871-7); *Voltaire* (1871); *Rousseau* (1873); *The Struggle for National Education* (1873); *Diderot and the Encyclopædists* (1878); *Burke* (1879); *Richard Cobden* (1881); *Studies in Literature* (1891); *Oliver Cromwell* (1900); and the able and authoritative *Life of W. E. Gladstone* (1903).

MORLEY, Margaret Warner: American educator and author: b. Montrose, Iowa, 1858, Feb. 17. She was graduated from the Normal College of New York in 1878 and has since taught in the Oswego Normal School, N. Y., and in the normal school at Milwaukee, Wis. She was for a time engaged in Armour Institute as teacher of biology and has lectured in Boston. She has published *A Song of Life* (1891); *The Bee People* (1899); *Wasps and Their Ways* (1901); *The Insect Folk* (1903); *Little Mitchell* (1904); *Butterflies and Bees* (1905); *The Renewal of Life* (1906); *Grasshopper Land* (1907); *Life and Love* (1895); *A Few Familiar Flowers* (1897); *Flowers and Their Friends* (1897); *The Honey Makers* (1899); *Seed Babies* (1899); *Little Wanderers* (1899); *Down North and Up Along* (1900); and other works intended to familiarize young people with science.

MORMONS, n. *mŏr'mŏnz*, or, as they call themselves, THE CHURCH OF JESUS CHRIST OF LATTER-DAY SAINTS: religious sect, founded by Joseph Smith, 1830, Apr. 6, in Fayette, Seneca co., N. Y., and having their headquarters for many years in Salt Lake City, Utah. MOR'MONITE, *-īt*, or MOR'MON, n. follower of Joseph Smith, and believer in his mission and in the communications of the so-called angel Moroni, son of *Mormon*. MOR'MONISM, n. *-ĭzm*, doctrines and practices of the Mormons.—*Mormons* are so named from the 'Book of *Mormon*,' whose plates were asserted to have been found in N. Y. by Joseph Smith, to whom their place of concealment was revealed and their contents interpreted by a so-called angel named Moroni, son of Mormon, who was the last great prophet in ancient America—Moroni having been dead about 1,400 years. According to Smith's etymology, *Mormon* is from 'Reformed Egyptian' *mon*, and English *more*, and means more good.

JOSEPH SMITH (1805, Dec. 23—1844, June 27) was born in Sharon, Windsor co., Vt.; son of a farmer. His parents were ignorant and of low repute. When he had reached the age of ten, they removed to Palmyra (now in Wayne co.), N. Y.; and four years later to Manchester, about six m. distant. The reputation of the family is said to have been of the worst kind; we are told that they avoided honest labor, were intemperate, untruthful, and suspected of sheep-stealing and other offenses. These accusations are generally denied by M., but Smith himself partly admitted them, affirming that he 'had never done anything so bad as was reported of King David, the man according to God's own heart.' Nevertheless, a rude sensual religiosity appears to have been mixed with his more carnal conduct. There is the most satisfactory evidence—that of his enemies—to show that from an early period he was regarded as a visionary and a fanatic. This fact is important as a clue to his *real* character, and an explanation of his otherwise unaccountable tenacity of purpose and heroism in the midst of fierce persecution. A *mere* impostor—i.e., a person who did not, in some sense or other, partly believe in his own mission, but who, on the contrary, felt that he was simply the liar and cheat that people called him—would have broken down under such a tempest of opposition and hate as Smith's preaching excited. Smith must have been, at least in part, honest in his delusion. In Wayne co., N. Y., a few years after the Smith family removed thither, an unusual religious excitement was prevalent, which affected various members of the ignorant household, so far at least as to turn their thoughts to great and mysterious themes. 'When about fourteen years of age,' Smith says, 'I began to reflect upon the importance of being prepared for a future state.' He then describes how he went from one religious denomination to another, but could find nothing satisfactory—nothing but 'a great clash in religious sentiment.' Then he began to withdraw into secret places, to spend hours

in prayer and meditation, and to receive angelic visits. The second of these happened on the evening of 1823, Sep. 21, when it seemed as though the house was filled with 'consuming fire.' In a moment, a 'personage' stood before him, 'with a countenance like lightning,' and 'visible to the extremities of the body,' who 'proclaimed himself an angel of God.' He informed Smith of various important particulars, as, 'that his sins were forgiven, and his prayers heard; that the covenant which God made with ancient Israel was at hand to be fulfilled; that the preparatory work for the second coming of the Messiah was speedily to commence; that the time was at hand for the gospel to be preached in its power and fulness to all the nations; and that Smith was chosen to be an instrument in the hands of God, to bring about some of his purposes in this glorious dispensation.' Besides all this, the angel gave him, by way of appendix, 'a brief sketch of the origin, progress, civilization, laws, and governments' of the aboriginal inhabitants of America—'of their righteousness and iniquity; and the blessings of God being finally withdrawn from them.' He was also informed where some golden plates were deposited, containing an abridgment of the records of the ancient prophets that had existed on the American continent. The angel appeared to Smith thrice that night, and afterward in many visits. He told him where the records were deposited, 'on the west side of a hill, not far from the top, about four miles from Palmyra, in the county of Ontario, and near the mail-road, which leads thence to the little town of Manchester.' He advised him to go and view them, which Smith did; but the prophet was not yet holy enough to obtain possession of them.

At length, after due disciplinary probation, as the recital proceeds, the angel of the Lord, 1827, Sep. 22, placed in Smith's hands the wonderful records, engraven on plates nearly eight inches long by seven wide, a little thinner than ordinary tin, and bound together by three rings running through the whole. The volume was altogether about six inches in thickness, a part of which was sealed. The characters, letters, or hieroglyphics on the unsealed part were small and beautifully engraved. They represented an unknown language called the 'Reformed Egyptian.' With the records was found a curious instrument, called by Smith 'Urim and Thummim,' consisting of two transparent stones, set in the rim on a bow fastened to a breastplate. By means of these stone-spectacles, God enabled him to understand and translate the ancient records into such humble English as the 'prophet' (who had received almost no school-education, and could read only with difficulty) was master of. The records contain the primitive history of America, from its first settlement by a colony—descendants of Jared, who lived soon after the flood of Noah—that came from the Tower of Babel, at the confusion of languages, till the beginning of the 5th c. of the Christian

era. These primitive colonists were a wicked and bloody race, and finally mutually destroyed each other, millions being slaughtered in the final conflicts. Silence again settled down upon America. But a new race came directly from Jerusalem about B.C. 600, during the reign of King Zedekiah: these consisted of Lehi and his wife; his four sons, Laman, Lemuel, Sam, and Nephi, together with their four wives; two 'sons of Ishmael,' and their two wives; Zoram, a servant, and his wife—in all, 16 men and women. They are supposed to have landed on the coast of Chili. After the death of Lehi, quarrels broke out among the brothers. The Lord had appointed Nephi ruler of the new race of colonists, but his elder brothers would not hear of it; as a punishment for which they and all their posterity were condemned to have dark skins, and 'to become an idle people, full of mischief and subtlety, which did seek in the wilderness for beasts of prey.' They are the ancestors of the American Indians, who are thus, according to Smith's records, simply *bad* Hebrews. The descendants both of Nephi and of his rebellious brothers increased and multiplied, but were almost continually at war with each other. In the time of Nephi the second, an awful earthquake announced the Crucifixion. Three days afterward, Christ himself appeared out of heaven; showed the Nephites his wounded side and the print of the nails; instructed them for forty days in the truths of Christianity; healed the sick, blessed children, administered the Lord's Supper, and planted churches, with apostles, prophets, pastors, teachers, and evangelists—the same order, the same priesthood, the same ordinances, gifts, powers, and blessing, as on the eastern continent. Hostilities, however, between the Nephites and their dark-skinned brethren continued to rage as fiercely as ever; gradually the purity of their faith declined; and finally, A.D. 384, a decisive conflict took place about four m. from Palmyra, at the hill Cumorah, in the former Ontario co. and present Wayne co., western N. Y., where the Christian Nephites were nearly annihilated: miracles thenceforth ceased, and unbelief gradually became supreme. Shortly before this, however, a prophet called MORMON, who with his son Moroni had been among the few that had escaped the slaughter, had been commissioned of God to write an abridgment of all their prophecies, histories, etc., and to hide it in the earth, till God should see fit to bring it forth, and to 'unite it with the Bible for the accomplishment of his purposes in the last days.' This is the famous BOOK OF MORMON, believed by the followers of Smith to be of equal authority with the Jewish and Christian Scriptures, and to form an indispensable supplement to them, containing God's revelations to the new, as the others to the old, world. In A.D. 420, by Moroni, who soon afterward died, these records, whose substance had been written by successive kings and priests, were finally sealed up where Smith found them.

The way in which Smith translated was as follows: he

sat behind a blanket hung across the room to keep the sacred records from profane eyes, and read off, by the help of his 'Urim and Thummim,' to one Oliver Cowdery, who wrote down what the invisible 'prophet' gave as a translation—Smith himself being, as he confesses, but a 'poor writer.' A farmer, of the name of Martin Harris, supplied Smith with necessary funds for printing the work. The *Book of Mormon* finally appeared before the world 1830, with the names of Oliver Cowdery, Martin Harris, and David Whitmer appended to a statement, that an angel of God had come down from heaven and shown them the original plates: a statement which a few years later was declared false by all three witnesses. This dubious testimony was immediately followed by that of eight other witnesses, among whom were Smith's own father and two brothers (suspected, however, it must not be forgotten, of being addicted to sheep-stealing and other nefarious practices), who affirmed that 'Joseph Smith, junior,' had shown them the mysterious plates. These, however, are the only persons who have been so privileged. No other human being has ever seen them. They have never been forthcoming, however loudly demanded; and of late years all knowledge of them has become traditional.

Attention was soon drawn to the strange work, and a controversy sprang up regarding its real authorship. Evidence was brought forward by the opponents of Smith to show that with the exception of certain illiterate and ungrammatical interpolations, bearing on religious matters, the so-called *Book of Mormon* was really borrowed or stolen nearly *verbatim* from a MS. historical romance written 1812 by a quondam clergyman, Solomon Spalding, a man of some gifts, but of unbalanced mind, who died 1816. The Mormons of course declare the whole story of Spalding's MS. romance a scandalous fabrication. While the death of those who could have testified to the facts prevents the evidence of Spalding's authorship from being absolutely conclusive, nothing has ever been shown disproving it. About 1829, Smith became acquainted with one Sidney Rigdon (b. Penn., about 1793) originally a 'Campbellite' preacher in Ohio, a man of some eloquence, and versed in the Scriptures. Rigdon was sometimes employed as compositor in a printing-office; and into his hands Spalding's romance is supposed to have fallen and to have been given by him to his new associate—in whose soul there may have been (according to our theory of his character) some rude and gross religious notions and feelings which led him to devise the ungrammatical religious interpolations. This theory acquires probability from the fact, that these religious passages do not refer to old-world faiths and the practices of an ancient ritual, but to quite modern questions, such as are well known to have been rife in the villages of western N. Y. about 1830. Calvinism, Universalism, Methodism, Millenarianism, Roman Catholicism, are discussed, if not in name, yet in reality.

Infant baptism is condemned; so, strange to say, are polygamy and freemasonry.

Undeterred, nevertheless, by exposure, ridicule, and hostility, Smith and his associates persevered in preaching their 'doctrine,' which was a new Americanized phase of millenarianism, only degraded below all that is ordinarily known by that name. They declared that the millenium was close at hand, that the Indians were soon to be converted, and that the New Jerusalem—the final gathering-place of the Saints—was to be somewhere in the heart of the American continent. The 'prophet's' house 'was frequently beset by mobs and evil-designing persons, several times he was shot at, and very narrowly escaped,' but his fearless courage continued to bring him disciples; and 1830, Apr 6, the *Church of Jesus Christ of Latter-day Saints* was organized. Smith was fiercely attacked by the leaders and preachers of the other religious denominations, but he kept his ground stubbornly, argued moderately well, and when argument failed had recourse to a style of zealous prophetic asseveration, which is generally irresistible with weak and ignorant people. But animosity grew ferocious against the new sect; and 1831, Jan., Smith and his followers considered it prudent to remove to a distant part of the country. They established themselves at Kirtland, Ohio, which was to be the seat of the New Jerusalem. There they made immense progress. Their missionaries were full of zeal (none more so, however, than Smith himself), converts were made in great numbers, and churches were established in Ohio, Penn., N. Y., Ind., Ill., and other states. Still the eyes of the new sect turned westward—to the region of the great prairies, where they might be allowed to work out their system in peace and freedom. In the autumn of 1831, a colony was established in Jackson co., Mo., which a 'revelation' given to Smith assured the Saints was 'the land of promise and the place for the city of Zion.' Land was largely bought, preaching was vigorously carried on, a printing-press was established, a monthly periodical, *The Morning and Evening Star*, and a weekly newspaper, *The Upper Missouri Advertiser*, were started to propagate the doctrines of the new sect; everywhere was visible a spirit of industry, sobriety, order, and cleanliness. It is only fair to the M to state these things. Account for it how we may, they were, in many important respects, morally, socially, and industrially, far in advance of their neighbors. When Smith returned to Kirtland, he set up a mill, a store, and a bank, and continued his propagandist labors with great success, but not without savage persecution; thus, on the night of 1832, Mar. 22, a mob of Methodists, Baptists, Disciples, and miscellaneous zealots broke into the prophet's house, tore him from his wife's arms, hurried him into an adjoining meadow, and tarred and feathered him. Sidney Rigdon was similarly handled and rendered temporarily insane. Smith, however, undaunted by this brutal treatment, preached next day

with his 'flesh all scarified and defaced,' and proved the folly of persecution by baptizing three new converts in the afternoon. Meanwhile, the brethren in Missouri continued to prosper, but this very fact deepened the animosity toward them of all who were not Mormons. Whispers also began to be spread about their indulging in a community of wives. The rumor was not true, but it probably originated in Rigdon's theory of the 'spiritual wife,' which Smith at first denounced, but afterward accepted, and thereafter commenced 'sealing wives' to himself in some mysterious way that Gentiles could not fathom. This first step toward polygamy—a doctrine not yet 'revealed,' however (in fact, *contrary* to the 'revealed' doctrine on the subject), materially helped to inflame the hostility of the impulsive and unscrupulous backwoodsmen. Secret societies (according to Smith, composed 'of the basest of men') were formed to expel the M. from Missouri, their periodicals were stopped, their printing-press confiscated, their bishops tarred and feathered, and numberless other outrages were committed. Finally, the hapless 'Saints' were compelled to flee across the Missouri River, and men, women, and children had to encamp in the open wilderness on a winter night in 1833. They subsequently settled in Clay co., in the same state, where they remained more than three years. 1834, July, they were visited by the 'prophet' himself, accompanied by 100 persons, mostly young men, and nearly all priests, deacons, teachers, and officers of the church. During a brief residence of one week among them, he accomplished much in the way of vigorous organization; next year a further step was taken in the development of a hierarchy by the institution of a body of apostles—12 in number—who were sent out to preach the new doctrines among the Gentiles. One of these 12 was the famous Brigham Young, who had become a convert about the close of 1832, and had soon shown wonderful sagacity and force of character. He was ordered to go to New England, and made numerous converts even among the acute people of those parts. In 1837 Orson Hyde and Heber C. Kimball were dispatched as missionaries to England, where they received large accessions to their numbers, especially from the masses in the great manufacturing and commercial towns, Manchester, Liverpool, Leeds, Birmingham, Glasgow, and, above all, from the mining districts of s. Wales, where Mormonism, in some places, almost competed for popularity with Methodism itself. Since then, they have extended their strange evangelization to the E. Indies, Australia, the islands of the Pacific, Egypt, Palestine, Turkey, and almost every country on the continent of Europe.

About the close of 1837 or the beginning of 1838, Smith's bank at Kirtland stopped payment, and proceedings were taken against the prophet and others for swindling. Luckily, just at this moment, he received a 'revelation' to depart into Missouri, which he instantly

obeyed, with all the more alacrity that internal disorders had painfully manifested themselves in the new colony. These were at last healed; but the conflict between the Saints and the other Missourians became fiercer, more envenomed, more sanguinary than ever, assuming, in fact, almost the proportions of a civil war. The prophet and Rigdon were thrown into prison, and finally, toward the close of 1838, the whole body of Saints, about 15,000, quitted Missouri, and took refuge in Illinois. Here they obtained a grant of land in the vicinity of the little town of Commerce, a name which the M., in obedience to a 'revelation' given to Smith, changed to Nauvoo, or The City of Beauty. The country was a mere wilderness when the M. settled in it: it soon began to rejoice and blossom as the rose. Lieut. Gunnison (a most intelligent and impartial writer) is forced by facts to be eloquent in praise of Mormon industry, and gives an enchanting picture of the new colony. The legislature of Illinois granted a charter to Nauvoo; a body of Mormon militia was formed, under the name Nauvoo Legion, of which the prophet was appointed commander, he was also appointed mayor of the city, and was thus supreme in all matters civil and military, as well as religious. But the doctrine of 'sealing wives' once more roused the wrath of the neighborhood, and serious disturbances took place, the ultimate result of which was that the prophet and his brother Hyrum were thrown into prison at Carthage. After a short time, it began to be rumored that the governor of the state was desirous of letting the two Smiths escape, whereupon a band of 'roughs,' about 200 in number, broke into the jail, 1844, June 27, and shot them. It was assassination; for they were defenseless prisoners, and had been promised safe conduct to their trial by the state authorities. Disastrous as this termination of his career was to Smith himself, it was a most fortunate thing for the system which he founded. 'The blood of the martyrs is the seed of the church.' A halo of solemn and tender glory now encircles the memory of one who stood greatly in need of such spiritual transfiguration. Much evil-doing may be laid to Smith's charge, but it cannot be shown that he was a polygamist, in our sense of the word. Years after his death, Brigham Young produced a paper which he said was a copy of a 'revelation' made to Joseph at Nauvoo, commanding him to take as many wives as God should give him. But it was not till 1852, Aug. 29, at a public meeting in Salt Lake City, that the 'revelation' was formally received.

Smith's death created great agitation and confusion among his followers. Sidney Rigdon and others aspired to succeed him, but the Council of the Twelve Apostles unanimously elected Brigham Young (q.v.), and events showed the wisdom of their choice. The legislature of Illinois having revoked, 1845, the charter given to the city of Nauvoo, and the hostility of their neighbors not having in the least abated, the Saints resolved to emigrate far beyond the boundaries of civilization, and to

seek a new home amid the solitudes of the Rocky Mountains, where they might pass their lives in unmolested peace. Explorers were sent out to examine the country, and brought back a favorable report of the Great Salt Lake valley. See GREAT SALT LAKE, SALT LAKE CITY: UTAH. 1846, Feb., the first emigrants crossed the ice-bound Mississippi, settled for a year in Iowa, and then marched, under strictest discipline, across the great wildernesses. Agricultural operations were commenced almost the instant they arrived at the shores of the Salt Lake. The cheerfulness, intelligence, and zeal exhibited on all sides were admirable. The world has never seen swifter, more active, more glad-hearted colonists than these singular 'Saints.' It would be unfair to shut our eyes to such facts: in judging Mormonism, we must keep them constantly in view, to prevent us from forming mere abstract and theoretical decisions, which will not in the least affect the future of Mormonism. Brigham Young arrived in the valley 1847, July 24, and the main body of the M. in the autumn of 1848. The Salt Lake City was soon founded, an emigration fund established, and settlers poured in from all parts of Europe and America; and perhaps a more evenly distributed amount of physical comfort was enjoyed here than in any other part of the world. In 1850 the govt. of the United States admitted the region occupied by the M. into the Union, as the territory of UTAH; and Brigham Young was appointed gov., by Pres. Fillmore. District judges also were appointed by the federal govt., but these were met with great suspicion and mistrust by the Saints, who finally drove them out of the country 1851. Brigham Young was then suspended from his office of gov., and Col. Steptoe of the U. S. army was appointed his successor. He arrived in Utah 1854, but found it prudent after some time to withdraw from the country. During the next two years, the collisions between the U. S. officers and the Saints became more and more frequent, and in the spring of 1856 all the U. S. officials were forced to flee from the territory. A new gov., Alfred Cumming, was appointed by the authorities at Washington 1857, also a new supt. of Indian affairs; besides, a force of 2,500 men was sent to enforce obedience to the laws of the United States. The Saints attacked their supply-trains, and compelled the enemy to winter at some distance from the Salt Lake. In the early part of the next year, negotiations were entered into between the contending parties; the M. submitted to the federal authority, and the federal troops were allowed to encamp on the w. side of Salt Lake, about 40 m. from Salt Lake City, where they remained till 1860, when they withdrew. After the civil war, the United States seemed determined to insist on its authority. A federal gov. was again appointed, and polygamy was declared 1871 to be a criminal practice contrary to U. S. laws; Brigham Young was even arrested. One of the most notable events in the recent history of the M. took place in the

year of Brigham Young's death (1877). John D. Lee, a Mormon bishop, was brought to trial, convicted, sentenced, and hanged for his share in an atrocious crime till then uninvestigated. In 1857 a party of M. and Indians, under Lee's command, assaulted a train of 150 non-Mormon emigrants at Mountain Meadows, near Utah, and massacred every soul of them. In 1882 congress opened its long-delayed campaign against the M., and, by a majority of nearly four to one, passed a bill prohibiting polygamy within the Union.

By act of congress 1862, July 1, it had been provided that every person having a husband or wife living, who at any place within the United States jurisdiction marries another, is guilty of bigamy, and is punishable by a fine of not more than $500, and imprisonment of not more than five years. The 'Edmunds Law,' 1882, Mar. 22, continued the provisions of the previous legislation, provided the same punishment for any man who at one time or during one day married more than one woman, imposed a fine of not more than $300, or imprisonment for not more than six months, or both, on any man cohabiting with more than one woman, and declared that no polygamist, bigamist, man cohabiting with more than one woman, or woman living with more than one man, in any place within the United States jurisdiction, should be eligible to vote or hold office under the govt. Still more extended legislation being needed, the Edmunds Anti-Polygamy Bill was presented to congress 1886, and with some slight modifications passed the house 1887, Feb. 17, and the senate Feb. 18. Among the provisions of this law are the following: In court proceedings for polygamy, bigamy, etc., the lawful husband or wife of the accused shall be considered a competent witness, and may be called, but shall not be compelled to testify without the consent of the accused. An attachment may be issued without a previous subpœna when there is reason to suppose that the latter will not secure the attendance of a witness in trials for polygamy, etc. Adultery shall be punished by imprisonment in the penitentiary not more than three years. Marriage or cohabitation between persons within, but not including, the fourth degree of consanguinity shall be considered incestuous, and punished by imprisonment 3 to 15 years. Prosecutions for adultery may be begun the same as for any other cause, the limitations of the territorial laws being annulled. For every ceremony of marriage a certificate shall be filled out, promptly recorded at the office of the court having probate powers in the county or district, and these records shall be constantly open for inspection. Territorial laws recognizing illegitimate children as heirs are annulled, and the powers of probate judges are curtailed. The atty.gen. of the United States is required to commence proceedings to forfeit and escheat property held by corporations in violation of the act of congress 1862 to punish and prevent polygamy, and of sec. 1890 Revised Statutes of the United States, and

turn such property over to the sec. of the interior, who shall apply the same to the benefit of the common schools in the territory in which it is taken, except that no buildings or grounds used solely for religious purposes shall be forfeited. The Perpetual Emigrating Fund Company is to be dissolved, its affairs settled, and the property invested and used for the benefit of the common schools of the territory. The acts of the legislature of Utah, and of the so-called state of Deseret, incorporating the Church of Jesus Christ of Latter-day Saints are annulled, and the affairs of the corporation are required to be wound up in a legal manner, under direction of the atty.-gen. of the United States. Women shall not be allowed to vote in the territory of Utah; the election districts must be abolished and a new apportionment as a basis for representation be made. As a condition to the right to vote, each person shall make oath that he will support the constitution of the United States, obey the laws, especially the act of congress 1882 respecting bigamy, and without taking this oath no person shall be capable of serving on jury or be eligible for office. The law further decrees the abolition of the office of territorial supt. of district schools, and the appointment, by the supreme court of the territory, of a commissioner to have oversight of schools. The laws by which the militia of the territory of Utah and the Nauvoo Legion were organized are annulled, and an organization of militia under United States laws is effected. In accordance with the provisions of this act, the United States authorities commenced proceedings to escheat to the govt. the property held by the M. which was not exempted by the provisions of the act itself. The M. opposed the action on the ground that the law was unconstitutional, but lost their case before the suppreme court of Utah 1888, Oct. 8, the court declaring that the corporation known as the Mormon Church was legally dissolved. The M. appealed to the supreme court of the United States, which, 1890, May 19, affirmed the judgment of the lower courts. Applications for the rights of citizenship by parties who had taken the Endowment-House oath of the Mormon Church were refused by the Utah supreme court 1889, Nov. 30. The legislature of Arizona passed an act 1885 designed to suppress polygamy more effectually than the existing laws had done, but it was soon afterward repealed. The legislature of Idaho passed 1889 a bill which disfranchised nearly all the M. in the territory. The case was carried to the territorial supreme court, which affirmed the validity of the act. An appeal was then taken to the United States supreme court. In 1896 Utah became a state in the Union (see UTAH).

At the 60th annual conference of the M. Church, 1890, Apr. 4, its pres. announced that the day of revelations had passed. He has emphatically stated that his people will accept the situation, and that in future the laws of the United States respecting polygamy will be obeyed.

Statistics of the Mormon Church and the Reorgan-

ized Church of Jesus Christ of Latter Day Saints (anti-polygamist) for 1905 are as follows: Utah, branch, 700 ministers, 796 churches and 300,000 communicants, reorganized branch, 800 ministers, 542 churches and 43,250 communicants.

Hierarchical Organization.—Mormonism is a theocracy; its priesthood, who rule in matters temporal and ecclesiastical, are divided into various orders. The highest is the *First Presidency*, composed of three persons, who are the successors of the apostles Peter, James, and John in the Church of the New Testament. Of these, even Brigham Young was nominally only *primus inter pares*. The first presidency is elected by the body of the church, and possesses supreme authority. The second office in point of dignity is that of *Patriarch*, whose chief duty is to administer blessings. Then follows the council of 'The Twelve,' whose functions are of great practical importance. They ordain all other officers, elders, priests, teachers, and deacons; they baptize, administer the communion, and take the lead in all meetings. Next come the *Seventies* (of whom there are many). They are under the direction of the 'Twelve Apostles,' and are the great propagandists, missionaries, and preachers of the body. The fifth order is that of *High-Priests*, composed usually of men advanced in years. Their duty is to officiate in all the offices of the church when there are no higher authorities present. After these come the *Bishops*, 'overseers' of the church chiefly in secular matters, attending to the registration of births, marriages, and deaths, the support of 'literary concerns' (such as newspapers and magazines), house-visiting, the settlement of private grievances, and the care of the poor. Indeed, according to Dixon (*New America*, I. 260), 'a bishop's main function is to see that no man in his ward, in his county, is in want of food and raiment.' The duties of the *Elders* are not very precise; they are charged with the conduct of meetings, and exercise a general surveillance over the *Priests*, who correspond to the 'fixed ministry' or stated preachers of other sects—i.e., they preach, exhort, and expound the Scriptures. The lowest orders are the *Teachers* and *Deacons*; the former are simply assistants to the priests, elders, and bishops, and act as catechists; the latter are church-collectors, treasurers, etc.—The whole priesthood is divided into two classes, the Melchizedecian and the Aaronic. To the first belong the offices of apostle, seventy, patriarch, high-priest, and elder; to the second, those of bishop, priest, teacher, and deacon. The Aaronic priesthood can be held only by 'literal descendants of Aaron,' who are pointed out by special revelation.

Doctrine.—The Mormons are almost incredibly materialistic in their theological doctrines. Their Godhead is formed on Buddhistic principles. While professing to believe in the Trinity, they explain that God was once a man, who has, however, so advanced in intelligence and power that he may now be called (comparatively speak-

ing) perfect, infinite, etc., but that he has still the form and figure of a man; he has even 'legs,' as is evident (says Pratt, 'the leading scholar of the Mormon Church') from his appearance to Abraham; though he has this advantage over his creature, that 'he can move up or down through the air without using them.' Christ is the offspring of the 'material' union, on the plains of Palestine, of God and the Virgin Mary—the latter being duly married after betrothal by the angel Gabriel. Yet Christ is believed to have had a previous existence, to have even made the universe out of 'unformed chaotic matter as old as God,' and worship of him is enjoined as Lord of all. The Paraclete or Holy Spirit is vaguely described, but also is material. It appears, however, that there is an older Trinity, that of 'Elohim, Jehovah, and Michael, which is Adam.' Adam, again, is declared to be the 'god' of Jesus Christ; Jesus Christ, the god of Joseph Smith; and Joseph Smith is now the god of this generation—but the whole complex of so-called theology is a mass of unintelligible rubbish. The human intellect probably never sank into more abysmal nonsense; all that can be definitely set before the mind is that M. believe that, by faith, obedience, holiness, any man may rise to become a deity, and acquire the power of making, peopling, and ruling a 'world' forever. The *second* article of the Mormon creed affirms that 'men will be punished for their own sins, and *not* for Adam's transgressions;' the *third* article states that 'through the atonement of Christ, all mankind may be saved by obedience to the laws and ordinances of the gospel.' The *fourth* article affirms these 'ordinances' to be: 1. Faith in the Lord Jesus. 2. Repentance. 3. Baptism. 4. Imposition of hands by the gift of the Holy Spirit. 5. The Lord's Supper, administered kneeling. The Saints, who are much averse to strong drinks, use water instead of wine in the communion, which is observed every week. The *fifth* article declares that 'men must be called to the work of God by inspiration;' the *sixth*, that the same organization must now exist that existed in the primitive church; the *seventh*, that miraculous gifts—'discerning of spirits, prophecy, revelations, visions, healing, tongues,' etc.—have not ceased. The 'discerning of spirits' led Smith, or rather his friends, Rigdon, Pratt, etc., who are understood to be the real authors of the metaphysics, into a variety of curious speculations. They believe that the soul of man was not created, but 'coexisted equal with God.' The *eighth* article is decidedly liberal; it expresses a belief that the word of God is recorded not only in the Bible and the Book of Mormon, but in 'all other good books.' As for some supposed contradictions in the Bible, they are admitted; but it is alleged that they are 'corruptions,' and that they can be removed by any prophet's inspired explanations. On the other hand, the statement that the Saints pretend to have a new and inspired translation of the Bible was denied by Brigham Young in a conversation

with Dixon (*New America*, I. 216-217). The *ninth* article expresses a belief in all that God has revealed, is revealing, or will yet reveal. The *tenth* affirms the literal gathering of Israel, the restoration of the ten tribes (the 'American Indians,' who are, in consequence, treated with considerable humanity by the Saints; the negro, on the other hand, being excluded from the Mormon Church, as a descendant of Cain), the establishment of the New Zion on the western continent, the millennial reign of Christ on earth, and the transformation of earth into a paradise. The *eleventh* article maintains 'the literal resurrection of the body.' The *twelfth* article asserts the absolute liberty of private judgment in matters of religion; the *thirteenth* declares it the duty of the Saints and all others to be 'subject to the powers that be, whether monarchical or republican.' The *fourteenth* and last is worthy of being universally accepted: 'We believe in being honest, true, chaste, temperate, benevolent, virtuous and upright, and in doing good to all men'; also that 'an idle or lazy person cannot be a Christian, neither have salvation.'

The great social peculiarity of the sect was their practice of polygamy. It was not so, however, at first. Rigdon, Kimball, Pratt, Hyde, and Young were its true originators; Emma, wife and widow of the prophet Smith, stoutly denied that her husband ever had any wife but herself. Young's 'revelation' she declared to be a fraud, and in consequence she withdrew to Nauvoo. Her four sons followed her, and founded a monogamic Mormon community, called the *Josephites*, but naming themselves the Reorganized Church of Jesus Christ of Latter-day Saints. These consider that the church led by Brigham Young was simply a faction of the original church, and that it went into apostasy. Another branch of the Mormons settled at Independence, Mo., proposed site of the 'New Jerusalem.' Meanwhile, at Salt Lake City, the practice of polygamy was encouraged on the ground that the rank and dignity of the Saints was proportioned to the number of their wives and children. A defense of the practice was also set up on moral grounds. Mormons asserted that their community was free of the horrible sin and viciousness that prevail elsewhere; fornication and adultery, with their guilty passions and abandoned conduct, were declared to be unknown; their wives were asserted (Burton and others are very strong on this point) to be happy, virtuous, and healthy, and they challenged comparison in regard to their domestic and social purity and felicity with any monogamic community in the world. Dixon strongly recognizes their virtues. Mr. Phil. Robinson, in his *Saints and Sinners* (1883) gives a favorable account of the Mormons in all but their polygamy, which he detests. In 1877, Young was succeeded by Wilford Woodruff. In 1898, President Woodruff died, and Apostle Lorenzo Snow succeeded to the presidency of the

Church. He also was a very old man, more than 85 years old, a friend of Joseph Smith, and an apostle since 1849. President Snow died 1901, Oct. 10, and was succeeded by Joseph Fielding Smith, a nephew of Joseph the founder.

See *Book of Mormon* (1830); *Book of Doctrine and Covenants*, consisting of select 'revelations' given to Smith (1832); *The Pearl of Great Price*, also by Smith (first published Liverp. 1851); *Journal of Discourses*, by Brigham Young and others (1854 *et seq.*); *The Exploration and Survey of the Great Salt Lake*, by Capt. Stansbury (1849); *The Mormons, or Latter-day Saints*, by Lieut. Gunnison of the U. S. Topographical Engineers (1852); *The Mormons*, by Col. T. L. Kane (1850); *The Mormons, or Latter-day Saints, with Memoirs of the Life of Joseph Smith; Voyage au Pays des Mormons*, par Jules Remy (1860); *The City of the Saints*, by R. F. Burton (1861); Dixon's *New America* (1867); Bush, *Geschichte der Mormonen* (Leipz. 1870), Mrs. Stenhouse (a convert from Mormonism), *An Englishwoman in Utah* (1880).

MORMYRIDÆ, *mawr-mĭr'ĭ-dē:* family of malacopterous fishes, allied to the *Esocidæ*, or Pike family; having long compressed bodies, and a slender tail swelling out at the origin of the caudal fin. The skin of the head is naked, enveloping the gill-covers and gill-rays, leaving only a slit for gill-opening. The mouth is small. All the known species inhabit the rivers of Africa. The SHARP-NOSED MORMYRUS (*Mormyrus oxyrhynchus*) is regarded as one of the best fishes of the Nile; it is caught by lines baited with worms. The mormyridæ are nocturnal fishes. They are sometimes represented on Egyptian monuments, and seem to have been held sacred by the ancient Egyptians. The modern Egyptian name is *Mizdeh.*

MORN, n. *mŏrn* [AS. and Ger. *morgen*, morn, morrow: Icel. *morgun* (see MORNING)]: the first part of the day.

MORNAY, PHILIPPE DE, SEIGNEUR DU PLESSIS-MARLY: French statesman: b. Buhy, Normandy, 1549, Nov. 5; d. La Forêt-sur-Sevre, 1623, Nov. 11. He was brought up a Huguenot, entered Coligny's service; escaped to England at the time of the Massacre of St. Bartholomew; returned to France in 1573, and in 1576 joined the army of Henry of Navarre, who used not only his sword but his pen and his diplomatic gifts, made him a member of his council, and appointed him governor of Saumur. After Henry became Henry IV. of France and a Catholic, Mornay was the sole Huguenot leader and was even styled the 'Huguenot pope' by his enemies. He retired to Saumur soon after the Edict of Nantes. Mornay wrote, among other controversial works aimed now at pagans, or atheists, now at the Roman Catholic Church, *De l'Eucharistie,'* urging the Calvinistic view of the Lord's Supper as opposed to transubstantiation (1598). His *Mémoires pour servir à l'Histoire de la Réformation en France*, re-edited in 1824, is a valuable source for the history of the period.

MORNING, n. *mŏrn'ĭng* [Goth. *maurgins;* Ger. and AS. *morgen;* Icel. *morgun*, morn, morrow: Wal. *murgu*, gray; *murgitu*, twilight]: the first part of the day; the period from 12 at night to noon; in *popular phrase*, the time between dawn and the middle of the forenoon; in *fashionable life*, all the part of the day before dinner; the first or early part, as of life: ADJ. done, occurring, or being in the morning. MORNING STAR, any planet seen shining in the morning—generally the planet Venus when she rises before the sun. MORNING-GOWN, a loose robe worn in the morning before being dressed.

MORNY, *mor-nē*, CHARLES AUGUSTE LOUIS JOSEPH, Duc de: French statesman, of the second empire: 1811, Oct. 20—1865, May; b. Paris; natural son of Hortense Beauharnais and of the Comte de Flahaut; half-brother of Emperor Louis Napoleon. The biographical dictionaries published under imperial censorship are silent regarding his parentage. The Comte de Morny, French nobleman resident in Mauritius, received 800,000 francs to adopt him as his son; but he was educated by his 'grandmother,' Madame de Flahaut; and Queen Hortense left him at her death, 1837, an annuity of 40,000 francs. M. entered the army 1832 as a sub-lieut., and is said, though scarcely credibly, to have shown at that early period a predilection for metaphysics and theology. He served with the army in Algeria; but soon abandoned a military life, and 1838 made his début in the world of fashion as a leader in dress and manners, and in the world of industry as a great manufacturer of beet-root sugar. Ever after that time, he was in all sorts of commercial and financial speculations—railway companies, canal companies, French and foreign mining companies, credit societies, industrial enterprises, etc. Chosen a deputy 1842, he quickly attained a prominent position by his aptitude for dealing with financial questions; but events showed that he had the spirit of an adventurer, and his recklessness at times excited a suspicion of enormous swindling somewhere. After the revolution of 1848, he became attached to the cause of his half-brother, and was leader of the subtle and treasonable policy of the Elysée. He was prominent in the *coup-d'état*. His rôle was to exhibit *sangfroid*, give sumptuous entertainments, and throw the republican leaders off their guard. Nor did he fail of success. He passed the evening of Dec. 1 at the *Opéra Comique*, and yet by six o'clock next morning the deed was done, and M. was minister of the interior. In 1854 he became pres. of the *Corps Législatif*, and was ambassador to Russia 1856–7, where he married the rich and handsome Princess Trubetskoi. The result of his Russian mission was the establishment of intimate political relations between the two governments, and a commercial treaty advantageous to both countries. M. was unscrupulous and extravagant, and frightfully addicted to sensual excess.

MOROCCO, n. *mō-rŏk'ō* [first prepared in *Morocco*, in Africa]: a fine kind of grained leather prepared from goat-skin, and often from sheep-skin: see LEATHER.

MOROCCO, *mō-rŏk'ō*, or MAROCCO, *mȧ-rŏk'ō*, called by the natives *Maghrib-el-Aksa*, 'the extreme west,' or briefly *Maghrib:* sultanate in n.w. Africa; bounded e. by Algeria, n. and w. by the Mediterranean Sea and Atlantic Ocean, s. by a line from Cape Nun (lat. 28° 45′ 43″ n.), easterly through the Sahara to the Algerian frontier in long. 2° e. Less is known about M. than any other n. African country. At the present day, M. includes the three former kingdoms of Maghrib, Fez, and Tafilelet; area variously estimated (as the southward limit is not definite) 260,000 to 305,000 sq. m.; pop. likewise variously estimated 2,500,000 to 8,000,000. Probably both area and pop. are nearer the larger than the smaller estimates. The country is generally stated to be mountainous, the Atlas (q.v.) range traversing it in several parallel chains s.w. to n.e., and sending out numerous spurs to both the coast-country and the desert. There are, however, many level tracts throughout M., especially at its w. and e. extremities, and on the borders of the desert. The central range of the Atlas forms the watershed separating the streams which flow into the Atlantic and Mediterranean from those which run southward to the desert. The former rivers have the shorter course and less volume, but they are perennial; while the latter become dry in summer, and even when running are lost in the sands of the Sahara. The chief rivers are the Muluya, with its tributary the Sharef, which drains the n.e. of the country and falls into the Mediterranean after a course of 400 m.; the Kos, Oom-a-beg, Bu-Regreb, Tensift, Suse, and Assaker, the last forming for part of its course the s. boundary of M., drain the central and w. districts, and fall into the Atlantic: the Draha, Fileli, Z z, and Gir irrigate the dry plains of Tafilelet, and the first-mentioned then empties itself into the Atlantic Ocean. The subsequent courses of the other three rivers are not yet ascertained.

The *climate* between the central range of Atlas and the sea is temperate, the thermometer seldom falling lower than 40° F., or rising above 90° F., owing partly to the regulating influence of the sea-breeze, and the shelter afforded by the mountains from the scorching winds of the desert; but in the s.e. districts, extremes of heat and cold are said to prevail, and rain is there unknown.

Among the chief *products* of the country are wheat, barley, rice, maize, durra, and sugar-cane; and among fruits, the fig, pomegranate, lemon, orange, and date are common; while cotton, tobacco, hemp, etc., are largely produced both for home use and for export. M. is supposed to be rich in mineral treasures; plentiful supplies of copper are obtained at Teseleght, near the source of the Assaker, and gold and silver occur in several places. Iron, antimony, lead, tin, and rock-salt, the last four in considerable quantity, are found. Owing to the char-

acter of the country and its thin population (about 35 to the English sq. m.), M. is much infested with wild animals. Lions, panthers, hyenas, wild-boars and various kinds of deer, gazelles, etc., abound in suitable localities, and occasional devastations are committed by locusts. Ostriches are found at Tafilelet. The Moorish horses, formerly so famous, are now much degenerated. The breeding of sheep, oxen, goats, camels, mules, and asses is an important item of national industry. Oxen and bulls are chiefly employed in field labor.

The *inhabitants*, like those of Barbary in general, consist of Moors, Berbers, Arabs, Negroes, and Jews, with various intermixtures between these races. More than two-thirds of the population belong to the race commonly called Moors (q.v.), the remaining third consisting mainly of Berbers or Amaziyehs (including the Berbers of the Riff Coast, and the Shelluhs of the Great Atlas); Jews, estimated at 340,000; and negroes. Very few Europeans reside in M. The state of civilization is very low—there is almost no education, and many of the Amaziyehs are complete savages. Excepting the Jews and the few Europeans, the whole population is Mohammedan. Negroes are brought into the country as slaves from Soudan.

M. is divided into four territories—Fez, Morocco, Suse, and Tafilelet. For convenience of administration, the empire is sub-divided into 33 governments or districts ('ammala'), each under the superintendence of a 'caid,' whose chief duty it is to collect the imposts; but the semi-independent tribes are ruled by their own chiefs, and scarcely acknowledge the authority of the sultan. The govt. is purely despotic, and in the absence of written laws, the will of the sultan and his subordinates decides everything. The public officials eke out their allowances by practicing extortion on those under their charge, and are in turn plundered by their superiors. The sovereign of M., called by Europeans the Emperor of M., is known among his subjects as sultan, and assumes the title of Emir-ul-mumenin, or 'Prince of the Believers.' The Grand Cherif (Sherif) at Tangier, being the chief descendant of the Prophet, has really more influence than the sultan.

Education consists in learning to read, write, and recite portions of the Koran, and this quantum of education is somewhat diffused among the people; but the art of printing is unknown, and the arts and sciences are at a very low ebb. The only industrial arts prosecuted to any considerable extent are the manufactures of caps, fine silks, and leather. In the production of leather, the Moors far surpass Europeans, and are able to render any kind of leather extremely soft and white, by the use, it is said, of two species of plants found in the country, and unknown to Europeans. They excel also in the production of brilliant colors in leather. The yellow leather is made in M. Proper, the green in Tafilelet, and the red in Fez. There is an important caravan-trade between M. and Soudan, also with Mecca and the

Levant. The principal exports are wool, hides, grain, cattle and sheep, leather, salt, etc.; and the imports, cotton, linen, and muslin goods, sugar, tea, coffee, hardware, gold-dust, indigo, ivory, etc. Mules, horses, and camels are the internal means of transport. Much of the Arabian trade is by coasting-vessels between Tangier and Egypt, as the carriage across the desert is very costly. At present two-thirds of the entire trade of Morocco is in the hands of British merchants.

The history of Morocco is generally similar to that of the rest of Barbary (q.v.) till the end of the 15th c. About that time Morocco was formed into a monarchy, and, notwithstanding internal divisions, had considerable prosperity; and the confines of the empire were extended as far south as Timbuktu. This empire fell to pieces, and was succeeded 1647 by that of the Sherifs of Tafilelet, who conquered both Morocco Proper and Fez, and united the whole country under one government. This is the present ruling dynasty. In the middle of the 17th c., the empire of Morocco embraced part of the present province of Algeria, and extended s. as far as Guinea, where it came into collision with the Portuguese settlements. Since the commencement of the 19th c., the rebellions of the wild mountain tribes, the disturbances in Algeria, and difficulties with foreign states, caused by the aggressions of the Riff pirates, have greatly retarded the well-conceived measures of the various rulers for the development of the resources and increase in civilization of Morocco. In 1814 the slavery of Christians was abolished; 1817, piracy was prohibited throughout Morocco. In 1844, Morocco took part in the war of Abd-el-Kader against the French, in the course of which Tangier was bombarded and Mogadore occupied; but peace was concluded in the same year. In 1851 and 56, complications took place with the French concerning some French vessels which had been plundered by the Riff pirates, but in each case compensation was given by the sultan. In 1859, the Spanish government, smarting under a series of similar outrages, demanded compensation, and also an apology for an insult to the Spanish flag at Ceuta; and on the sultan's disclaiming all responsibility for these acts, war was declared by Spain, 1859, Oct. 22, and a large force under Marshall O'Donnell invaded Morocco. It resulted in a cession of land and an indemnity of $20,000,000 to Spain. The present Sultan Abdul Asiz IV. succeeded his father El Hasan III., in 1894, when he was 14 years of age. For seven years the government was in the hands of the grand vizier Si Ahmed Ben Misa, who ruled despotically and kept the country well under control. At his death in 1900, May, the Sultan virtually commenced his reign, and, well educated, of a liberal frame of mind, attempted to introduce reforms of a European character, which aroused the antagonism of his subjects, and a rebellion resulted under the leadership of Omar Zaraburi, his

elder brother. The royal troops were defeated, the Sultan and his capital invested, and the insurrection was for a long time unchecked. With the financial assistance of France, the sultan's troops at length made his position comparatively secure, although his brother was left in possession of the imperial fortress of Taza, three days journey from Fez, and the country was kept in a continuous state of disturbance by bold acts of brigandage on the part of rebel leaders. On 1904, May 18, Rais-Uli, a prominent chieftain, captured and held for ransom the Hon. Ion Perdicaris, an American subject, and his stepson, Mr. Varley, an English subject. The ultimatum of the United States secretary of state, John Hay, 'Perdicaris alive, or Rais-Uli dead,' a naval demonstration of American warships, and representations from European courts, compelled the sultan to comply with Rais-Uli's demands, and the captives were released. The sultan's weakness became more and more apparent to the insurgent tribes of northern and central Morocco, and contempt for the rights of foreigners, with utter lawlessness, prevailed throughout the kingdom. At the ports, especially Tangiers, the property of Europeans, and even their lives, were in jeopardy. To safeguard the loan of $10,000,000 which had been advanced to the sultan, the French government arranged for the appointment of a French financial adviser, with agents, to undertake the control of the customs; it was also arranged to police Tangier with French-Algerians, and a French military mission proceeded to Fez. By the Anglo-French agreement of 1904, Apr. 8, France, as the nation whose dominions bordered on Morocco, was to be unhindered by Great Britain in guarding the tranquility of that kingdom, in return for allowing Great Britain freedom of action in Egypt; moreover, freedom of trade was guaranteed for 30 years in Egypt and Morocco. In 1904, Oct., a Franco-Spanish agreement was also arranged, which recognized the terms of the Anglo-French agreement, the maintenance of the territorial integrity of Morocco, the neutralization of the coast between Melilla and the Sebu river, the preponderating right of France to give the sultan military, economic, and financial assistance, and modified the limits of the Spanish sphere of influence. In 1905, Jan., the reforms submitted by the French government were received with marked disfavor by the sultan and by his council of notables. This was thought later to have been due to German diplomacy, which, under the terms of the Madrid convention of 1880, refused to recognize the agreements made by France with Great Britain and Spain concerning Morocco.

In 1880, the Madrid convention with Morocco, bearing the signatures of Austria, Belgium, Denmark, Germany, France, Great Britain, Italy, Morocco, the Netherlands, Portugal, Spain, Sweden and Norway, and the United States, had established the right of protection in Morocco, and the 17th article of the treaty reads: 'The right

to the treatment of the most favored nation is recognized by Morocco as belonging to all the powers represented at the Madrid conference.'

The German opposition was further emphasized by the visit of the German emperor, William II. to Tangier, 1905, Mar. 31, when he assured the sultan of his intention to uphold the integrity of the Moroccan kingdom, and the equality of Germany's commercial and economic interests in the country. A special German mission was sent to Fez, and British and Spanish missions also proceeded to the Moorish capital, ostensibly to support the French policy. The sultan and advisers, 1905, May 28, refused to entertain the proposed reforms and advised an international conference of the powers to deliberate on the Moroccan situation. After protracted negotiations between France and Germany, which were shadowed by rumors of probable war between the countries, and in which the resignation of M. Delcassé, the French minister of foreign affairs, and the downfall of the Rouvier ministry were incidents, a programme was arranged to place before the international conference. Algeciras in Spain, opposite Gibraltar, was chosen as the meeting place.

Various reasons were assigned for the unexpected raising of the Moroccan question by Germany; among these were—alarm at the apparent isolation of Germany in European politics, at the increase of French influence in North Africa, and at the consummation of an agreement which implied a further territorial division of Africa by private arrangement between two powers, regardless of German and other economic rights.

The various countries signatory to the Madrid convention of 1880 sent delegates to Algeciras, and the conference was opened 1906, Jan. 16. The presence of the United States representatives was explained as safeguarding the nation's commercial interests in Morocco; with the political aspects of the conference, arising solely from the strained relations between Germany and France, wherein a *casus belli* might be found, the United States agents were specifically instructed not to participate. The meetings of the conference lasted until 1906, Mar. 31, when after strenuous opposition and counter-proposals on the part of Germany, supported only by Austria, against the French programme, supported by Great Britain, Russia, Italy, Spain, Portugal, the United States, Belgium, and Holland, an agreement on all points was reached. The French programme maintained that the police under the sultan's orders should be commanded by French and Spanish officers and sub-officers nominated to the sultan and appointed by him, and that the inspector-general of the police should report to the sultan. Germany made a series of propositions in opposition to this general plan, seeking to bring the whole Moroccan business practically under the control of the European concert, requiring those powers directly acting in Morocco to take a European

mandate, and to be subject to the interposition of the other powers, of which Germany would be an important one. Matters had almost reached a deadlock when a proposition relative to a mixed police force for the ports in dispute was brought forward by Ambassador White, under instructions from President Roosevelt, and introduced by the Russians, provided a solution for the existing difficulties. The division and the policing of the ports of Morocco was arranged as follows: Spain to police Tetuan and Larache; a Franco-Spanish mixed police to be established at Casablanca and Tangier, and a French police force alone to have charge of Mogador, Saffi, Mazagan, and Rabat. The result of the conference was virtually a victory for France, which retains the preponderance of influence in the financial affairs of the kingdom, and loses little of what was demanded with regard to the policing of the country.

Consult Amicis, *Morocco and Its People* (1879); Bonsal, *Morocco as It Is* (1892); Hay, *Morocco and the Moors* (1896); Meakin, *The Land of the Moors* (1901).

MOROC'CO, or MAROC'CO (Arab. *Marakash*): one of the nominal capitals of the sultanate of the same name; in the s.w. of the country, 4 m. s. of the river Tensift, and at the n. end of an extensive and fertile plain. It is surrounded by a strong lime-and-earth wall 30 ft. high. The town is ill-built, the streets narrow, irregular, and unpaved; the houses, generally of the same materials as the wall, are one story high, with flat roofs, and narrow openings instead of windows. A large portion of the space within the walls is occupied with gardens, open areas, and market-places. In the bazaar and market-place, a large miscellaneous trade is carried on. Morocco possesses 20 mosques, of which 6 are remarkable for size and elegance. There are several tanning and leather-dyeing establishments, some of great extent. On the s. of the city, outside the walls, stands a palace of the sultan of Morocco, occupying a space of about 180 acres.—Morocco was founded 1072, and reached the summit of its prosperity in the 13th c., when it contained more than 700,000 inhabitants, since which time it has been rapidly decaying. It is now half in ruins. Pop. estimated about 60,000.

MORONE, n. *mō-rōn':* a deep crimson color like the unripe mulberry; maroon, which see.

MOROS, *mō'rōz:* people of the Malay race inhabiting the southwestern part of the Philippines, chiefly the Sulu archipelago and the islands of Palawan and Mindanao; various subdivisions include the Illanos, Samales, Joloanos, Maguendanaos, etc. Mohammedanism was propagated among the Moros in the 14th century by Malays from the island of Borneo, and is the prevailing religion. The Moro alphabet, which is still retained in writing, shows distinct traces of Arabic origin introduced by

Arabic teachers of the doctrines of Islam. The Moros are governed by their local chiefs, dattos or sultans, under a form of primitive feudalism.

They have no system of laws as such. The penal passages of the Koran, taken in connection with local customs, are referred to as the *Titab;* the local customs being mainly interpretations or even evasions of the Koran. Land is held in common, and dattos claiming sections as their own; in some localities, a 'Master of the Field,' allots plots of ground to individuals for permanent or temporary occupancy. Such real estate may not be alienated without permission having first been obtained from the authority granting residence thereon. Slavery and polygamy prevail among them, and they have for many years engaged in piracy and predatory expeditions against the neighboring Filipinos. Their religion and peculiar customs, as well as their spirit of independence, have made the government of their country one of the greatest problems of the United States occupation of the Philippines. The Sulu archipelago in 1901 was placed under military supervision and government in accordance with a treaty made by the United States representative and the sultan of Sulu, whose power, however, is diminishing among his people. In 1903 a law was passed by the Philippine commission providing government for the Moro country of Mindanao and adjacent islands; this act provides that the civil governor of the Philippine Islands shall appoint for the Moro province a governor, attorney, secretary, treasurer, superintendent of schools, and an engineer; these officials also constitute a legislative council of which the governor is presiding officer. The provincial governor and engineer may be officers of the army detailed on request of the Philippine commission by the commanding general of the division of the Philippines to perform the civil duties of such office.

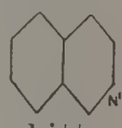
It is further provided that the legislative council shall enact laws for the organization of a school system; for the creation of local governments among the Moros and other non-Christian tribes, also laws investing district governors with the power of adjusting under the supervision of the provincial governor, all differences between sultans, dattos, and any independent local authorities; shall collect and codify the laws of the Moros and make them consistent with the laws of congress; provide courts, and enact laws providing for the abolition of slavery and the suppression of all slave hunting and slave trade. The lessening of the evils of slavery has received particular attention from the American authorities from the first. The Moros were informed in 1900 that slaves who sought the protection of the United States garrison would be considered free and their freedom enforced. The datto at Zamboanga in 1901 abolished slavery among his followers. In 1903 the legislative council of the Moro province passed a law prohibiting slave hunting in all the prov-

ince, which law was immediately confirmed by the Philippine commission.

MOROSE, a. *mō-rōs'* [F. *morose*—from L. *morōsus*, hard to be pleased, capricious—from *mos*, usage, custom: It. *moroso*]: of a sour temper; gloomy; sullen. MOROSE'LY, ad. *-lĭ*. MOROSE'NESS, n. *nĕs*, the state or quality of being morose; sullenness. MOROSITY, n. *mō-rŏs'ĭ-tĭ*, moroseness; sourness; peevishness.—SYN. of 'morose': surly; austere; ill-natured; ill-humored; gruff; severe; splenetic; crabbed; crusty; churlish; peevish; sullen.

MORPHEUS, n. *mŏr'fūs* [Gr. *Morpheus*—from *Morphē*, form, shape—literally, the shaper or fashioner]: in the *classic mythology*, son of Somnus (Sleep), and the god of dreams; named Morpheus because he shapes or molds the dreams that visit the sleeper. He is mentioned first by Ovid, and is represented as an old man with wings, pouring soniferous vapor out of a horn.

MORPHINE, *mŏr'fĭn* [Gr. *Morpheus*, the god of dreams: F. *morphine*]: the chief alkaloidal constituent of opium, in which it is usually present to the extent of 9 per cent. Its constitution is not known with complete certainty, but it is derived from isoquinoline (see CHEMISTRY) and has the formula $C_{17}H_{19}O_3N$ H_2O. It crystallizes in short prisms and has a bitter taste. In small quantities it is sometimes used in medicine to produce sleep or to relieve pain, being usually administered by subcutaneous injection in the form of hydrochloride, $C_{17}H_{19}O_3N$ HCl $3H_2O$. Morphine is a frequent constituent of many patent medicines which are sold as 'pain killers' or 'soothing syrups.' Except when taken under competent medical advice its use is decidedly dangerous, and it is excessively injurious to infants or children. When administered feloniously, morphine is detected readily by the intense blue color which it gives with ferric chloride and the deep blood-red color produced by adding nitric acid to its solution in concentrated sulphuric acid. These tests are very delicate. One of the best antidotes for morphine poisoning is strong, hot, black coffee to be given after the action of an emetic, the patient should be stimulated by ammonia, an electric battery, shaking or beating, so as to prevent his sleeping. Of course this treatment can in no way take the place of expert medical assistance, which should be secured quickly.



The therapeutic uses of morphine and its salts are very similar to those of opium (q. v.); but the preparations of morphine are preferable to opium and laudanum in being less liable to occasion nausea and headache. The ordinary dose of morphine, or its hydrochlorate, acetate, or sulphate, when given to an adult to allay pain or induce sleep, ranges from an eighth to a quarter of a grain. Hypodermic injection (that is, the introduction of morphine beneath the skin by a small instrument) is the

usual method of giving the drug, but is also efficient, given in somewhat large dose, by the mouth. There is great danger, when morphine is given therapeutically, of forming an enslaving habit. The drug should never be taken except under the physician's direction, and should be used only to relieve extreme pain—never simply to induce sleep.

MORPHOLOGY, n. *mŏr-fŏl'ŏ-jĭ* [Gr. *morphē*, form; *logos*, description]: department of botany which treats of the forms that the different organs of plants assume and the laws that regulate their metamorphoses; applied to animals also in same sense; the general laws of the grammatical structure of a language. Morphology is now frequently used to denote the whole science of organic form, vegetable and animal. In a less comprehensive sense, it denotes the study of what has been generally termed Metamorphosis. See METAMORPHOSIS OF ORGANS, in Botany; METAMORPHOSIS OF ANIMALS; BIOLOGY; TISSUE. MORPHOLOGICAL, a. *mŏr'fō-lŏj'ĭ-kal*, connected with or relating to morphology. MORPHOL'OGIST, n. *-ŏ-jĭst*, one versed in morphology.

MORPHOSIS, n. *mŏr-fō'sĭs* [Gr. *morphē*, shape]: in *bot.* the order or mode of development of any organ or organs.

MORPHY, *mawr'fĭ*, PAUL CHARLES: 1837, June 22—1884, July 10; b. New Orleans. When 10 years of age he learned from his father the principles of the game of chess, and within two years defeated the best amateur players in the city. He was educated at St. Joseph's College, Spring Hill, Ala., from which he graduated 1854. While in college he defeated several noted chess players, including John J. Löwenthal of Hungary. He studied law and, 1857, was admitted to the bar. In that year he attended the chess congress at New York, and by a series of brilliant games won the championship of the United States. The following Jan. he challenged American amateurs and professionals, offering odds of pawn and move, but no one accepted. He then commenced playing without the board and carrying on several games at once. In June he went to London, where he again met Löwenthal, and in a series of 14 games won 9, losing 3, while 2 were drawn. At Birmingham he met the British Club, and, without seeing the boards, played eight games simultaneously, of which he lost one, won six, and one was drawn. In the autumn he went to Paris, where, when blindfolded, he played at the same time with eight expert players, six of whom he defeated, while the other two games were drawn. He vanquished Anderssen, the German champion, and, after spending some time in London, where he won new honors, returned to New Orleans. He made an effort to practice law; but the excessive strain of his blindfold playing had impaired his mental powers and undermined his physical health to such an extent that

he did not succeed. He gave up playing, and for some years before his death could not bear to see or hear of a game of chess. He died at New Orleans.

MORRELL, Imogene Robinson: American artist: b. Attleboro, Mass. She was married to Abram Morrell in 1869. After studying art in the United States she proceeded to Europe, and became a pupil of Adolpf Schrodter at Düsseldorf, and of Couture at Paris (1864). In 1874 she returned to America, where she opened a studio at Washington as a portrait and historical painter, and there established and became first president of the Washington National Academy of Fine Arts, 1879. Fourteen medals have been awarded to her paintings, among which some of the most notable are: *The First Battle of the Puritans; Washington Welcoming the Puritan Trains at Newburgh, N. Y.; Portrait of General John A. Dix.;* etc.

MORRILL, Justin Smith: American senator: b. Strafford, Vt., 1810, Apr. 14; d. Washington, D. C., 1898, Dec. 28. He received a good primary and secondary education, was a merchant and then a farmer; was elected to the house of representatives in 1854, and was re-elected five times; in 1867 was transferred to the senate, in which he was long chairman of the committee of finance. With his 12 years in the lower house and 31 in the upper he was more closely connected with congress than any other man of his time, and was styled 'The Father of the Senate.' He introduced the war revenue tariff of 1861, commonly called the Morrill tariff, and during his later years consistently opposed the remonetization of silver. Senator Morrill wrote *The Self-Consciousness of Noted Persons* (1886).

MORRILL, Lot Myrick: American politician: b. Belgrade, Me., 1813, May 3; d. Augusta, Me., 1883, Jan. 10. He was educated at Waterville College (now Colby University), studied law and was admitted to the bar in 1839, when he went to Augusta and established a law practice. He took an active part in politics, in 1854 was elected to the legislature, and in 1856 was chosen president of the senate. He was governor of his state 1858-60 and in the latter year was elected to the United States senate, where he proved himself an indefatigable worker. He favored the resumption of specie payment and was authority on financial, naval, and Indian affairs. In 1876 he retired from the senate to become secretary of the treasury under President Grant, and during his administration of that office constantly urged the return to specie payment. He declined an appointment to a foreign mission under President Hayes, and in 1887 became collector of customs at Portland, Me., in which office he died.

MORRIS: city, county-seat of Grundy co., Ill., on the Illinois river, the Illinois & Michigan canal, and on the Chicago, R. I. & P. railroad; about 60 miles s.w. of Chicago. The first settlement was made in 1834, and

1857 the town was incorporated. The surrounding country is a fertile agricultural region in which there are large bituminous coal fields. The principal manufactures are brick, tile, paper car-wheels, oatmeal, flour, and leather. The city has considerable trade in coal, live-stock, and grain. It is the seat of Saint Angela's Academy and has good public and parish schools. Pop. (est.) 4,400.

MORRIS: village, county-seat of Stevens co., Minn.; on the Great N. and Northern P. R.R.'s; about 160 miles w. by n. of St. Paul. Good water is obtained from the Pomme de Terre river, which is near. The chief product of the surrounding agricultural region is wheat. The principal manufactures of the village are flour and dairy products. There are several grain elevators, stock yards, and lumber and brick yards. The village has a good school and a public library. Pop. 2,080.

MOR'RIS, Benjamin Wistar: American Protestant Episcopal bishop: b. Wellsborough, Pa., 1819, May 30; d. Portland, Ore., 1906, Apr. 8. He was graduated from the General Theological Seminary in 1846, and held successive rectorates in Sunbury, Manayunk, and Germantown, Pa. He was consecrated missionary bishop of Oregon and Washington in 1868, Dec., and on the division of the diocese in 1880 became bishop of Oregon. He published *Presbyterian, Baptist and Methodist Testimony to Confirmation.*

MORRIS, Charles: English song writer: b. 1745; d. near Dorking, Surrey, 1838, July 11. In 1764 he entered the 17th foot, with which he served in America, later exchanged into the Irish Dragoons and the 2d life guards, in 1785 was made bard of the Beefsteak Society, and before its gatherings sang many of his wittiest efforts. His humor and vivacity led Curran to say, 'Die when you will, Charles, you will die in your youth.' He wrote hundreds of songs, many being political ditties for the Whigs; and a posthumous volume, *Lyra Urbanica* (1840), collected them. His *A Reason Fair to Fill My Glass* was praised by Moore and set to music by Charles Dibdin.

MORRIS, Charles: American naval officer: b. Woodstock, Conn., 1784; d. 1856. Entering the navy in 1799, he participated in the war with Tripoli, was an actor in the recapture of the Philadelphia, in the harbor of Tripoli (1804), being the first to gain her deck when she was boarded. At the outbreak of the War of 1812 he was serving as executive officer of the Constitution; he was wounded in the engagement of 'Old Ironsides' with the Guerrière; and afterward successfully commanded the John Adams until, being blockaded by a British squadron in Penobscot river, he was compelled to destroy his ship to save her from being taken by the enemy. In the war with Algiers he commanded the Congress, and it was he who, in the Brandywine, carried

Lafayette home to France. After serving for some years as naval commissioner, and as supervisor of the United States naval Academy, he became chief of the bureau of ordnance and hydrography, which position he held till the time of his death. Consult his *Autobiography* (1880).

MORRIS, CHARLES: American author: b. Chester, Pa., 1833, Oct. 1. He was educated in Chester, and became professor in the Academy of Ancient and Modern Languages, Philadelphia; afterward engaged in business, and since 1878 has devoted himself to literary work, giving special attention to historical and scientific subjects. His publications include *A Manual of Classical Literature; The Aryan Race; Tales from the Dramatists; The War with Spain; Our Nation's Navy; Famous Men and Great Events of the 19th Century; New Century History of the United States* (1900); *Life of William McKinley* (1901); *Life of Queen Victoria* (1901); *The Volcano's Deadly Work* (1902); *Twentieth Century Cyclopedia of Useful Information* (1902); *Our Naval Heroes* (1902); *The World's Famous Orators* (1903); *History of the World* (1904); *Hero Series* (4 vols., 1906-7); *The Old and the New South* (1907); *Home Life in All Lands* (1907); etc. He has also edited *Half Hours with the Best American Authors; The Encyclopædic Dictionary; The Imperial Reference Library;* etc.

MORRIS, CLARA: American actress: b. Toronto, Canada, 1849. In 1869 she became the leading lady in Wood's Theatre, Cincinnati, O., and in the winter of 1869-70 joined Augustin Daly's Fifth Avenue Company, New York. She at once achieved success in emotional rôles, and afterward made many tours throughout the United States. Her leading rôles include *Camille;* Alixe in the *Countess de Sommerive; Mercy Merrick; Miss Multon;* Lady Macbeth; *Leah the Forsaken;* and Cora in *L'Article 47.* She wrote much for periodicals, and published in book-form *A Silent Singer* (1899); *My Little Jim Crow* (1900); *A Pasteboard Crown,* a work of fiction (1902); *Stage Confidences* (1902); *The Trouble Woman* (1904); *Life of a Star* (1906); etc. She was married to F. C. Harriott in 1874.

MORRIS, DANIEL, M.A., D.C.L., D.SC., F.L.S.: British colonial expert: b. Loughor, Glamorgan, 1844, May 26. He was educated at Cheltenham, at the South Kensington Royal College of Science, and at Trinity College, Dublin, where he received high honors. He was assistant director of the Royal Botanic Gardens of Ceylon in 1877; investigated and checked the coffee-lead disease; became director of the Botanic Department of Jamaica in 1879, assistant director of the Royal Gardens at Kew in 1886, treasurer of the Royal Horticultural Society in 1896, and commissioner in the West Indian Imperial Department in 1898. Among his publications are *Cacao: How to Grow and How to Cure It* (1882); *Agricultural Resources of St.*

Helena (1884); *The Vegetable Resources of the West Indies* (1888); *Sisal Industry of the Bahamas* (1896); *Canton Lectures on Plants Yielding India-rubber* (1898); etc.

MOR'RIS, GEORGE P.: 1802, Oct. 10—1864, July 6; b. Philadelphia, Penn. He removed to New York when quite young, and at the age of 15 began writing for the press. With Samuel Woodworth he established the *New York Mirror,* which was published 1823-42. In 1843, with Nathaniel P. Willis, who had for some time been associated with him, he started the *New Mirror.* After various changes of name the *Home Journal* was established 1846, of which, in connection with Mr. Willis, he was editor until about the time of his death. These papers were among the best literary publications of the time. Morris was brigadier-general of the N. Y. militia. He was a graceful writer, and published several vols. of prose and poetry. His most enduring fame rests on his numerous songs, of which *Near the Lake Where Drooped the Willow, My Mother's Bible, Long Time Ago, Where Hudson's Wave,* and *Woodman, Spare That Tree,* are among the most popular. He died in New York.

MOR'RIS, GEORGE SYLVESTER: b. Norwich, Vt., 1840, Nov. 15; d. 1889, Mar. 23. He graduated from Dartmouth College 1861, entered the army, was tutor one year, studied theology, and spent two years in philosophical studies in Germany. He was professor of modern languages in the Univ. of Mich. 1870-80, and 1881 was elected professor of philosophy in the same institution. For seven years from 1878 he was also a lecturer at Johns Hopkins Univ. Besides a translation of Ueberweg's *History of Philosophy,* he has published *British Thought and Thinkers, Kant's Critique of Pure Reason: A Critical Exposition,* also *Philosophy and Christianity,* and *Hegel's Philosophy of the State and of History: An Exposition.*

MOR'RIS, GEORGE UPHAM: 1830, June 3—1875, Aug. 15; b. Mass. He entered the navy 1846, was frequently promoted, and became commander 1866. He was complimented in the report of the sec. of the navy for his brilliant defense of the *Cumberland* when attacked by the *Merrimack.* He rendered valuable service in other engagements. In 1874 he was placed on the retired list. He died in Virginia.

MOR'RIS, GOUVERNEUR: 1752, Jan. 31—1816, Nov. 6; b. Morrisania, N. Y. He graduated from Kings (present Columbia) College 1768, and commenced practicing law 1771. Before reaching his majority he obtained reputation as a writer on financial subjects. He was 1775 an eminent member of the first provincial congress, and aided in drafting the constitution of the state of N. Y. 1776. He was member of the continental congress 1777-80. In the latter year he lost a leg by being thrown

from a carriage. He was prominent in arranging the details of the treaty of peace with England, and for more than three years was the assistant of Robert Morris (q.v.) in managing the financial affairs of the nation. He was a delegate to the convention by which the federal constitution was framed, and he made the final revision of its work. In 1788, Dec., he went to Paris, where he was engaged in business till 1791, when he went to England as confidential agent of the U. S. government. He was minister to France 1792-94, spent some years in travel in Europe, was in the U. S. senate 1800-1803, and president of the N. Y. Canal Commission from 1810 till his death. He wrote numerous essays on financial and political subjects, and 1814 was president of the N. Y. Historical Society. His *Memoirs* by Jared Sparks were published in three vols.; he forms the subject of a vol. in the *American Statesmen Series,* and his *Diary and Letters,* 2 vols., edited by his granddaughter, were published 1888, Dec. He died at Morrisania, N. Y.

MORRIS, Gouverneur: American novelist, great-grandson of the preceding: b. New York 1876, Feb. 7. He was graduated from Yale in 1898 and has published *A Bunch of Grapes* (1897); *Tom Beauling* (1901); *Aladdin O'Brien* (1902); *The Pagan's Progress* (1904); *Ellen and Her Man* (1904); etc.

MORRIS, Harrison Smith: American author: b. Philadelphia, 1856, Oct. 4. He was educated in the public schools, and early began to do literary work. From 1899-1905 he was editor of *Lippincott's Magazine.* He is versed in the history of art, and was managing director of the Pennsylvania Academy of Fine Arts, in Philadelphia, 1893-1905. Since 1905 he has been art director of the *Ladies' Home Journal.* He has written *A Duet in Lyrics;* poems, with J. A. Henry (1883); *Tales from Ten Poets* (1893); *Madonna and Other Poems* (1894); a continuation of Lamb's *Tales from Shakespeare* (1893); and has edited *In the Yule Log Glow* (1892) and *Where Meadows Meet the Sea* (1892).

MOR'RIS, Henry W.: 1806-1863, Aug. 14; b. New York; grandson of Gouverneur Morris. He entered the U. S. navy 1819, was promoted lieut. 1828, became commander 1849, and capt. 1856. He served with credit at home and abroad, was with the Brazilian squadron 1853-55, in the latter year was transferred to the Mediterranean squadron, in which he was fleet captain. In 1861 he attended the construction of the famous steam sloop of war *Pensacola* at the navy-yard at Washington. The following year he rendered brilliant service in the reduction of the forts and batteries guarding New Orleans, and when the city surrendered was placed in command of the noval force stationed in the vicinity. He was promoted commodore 1862. Failing health caused his return 1863 to New York, at which city he died.

MORRIS, John Gottlieb: American Lutheran clergyman: b. New York 1803, Nov. 14; d. Lutherville, Md., 1895, Oct. 10. He was graduated from Dickenson College in 1823 and studied theology at the Princeton and Gettysburg seminaries, receiving his license to preach in 1826. He founded the 1st English Lutheran Church of Baltimore and was in charge of it in 1827-60, after which he held various important charges. He was chiefly instrumental in the founding of the College for Women in Lutherville and of the town. From 1834 until his death he was lecturer at Pennsylvania College, and he also lectured in the Smithsonian Institute at Washington. He was prominently connected with scientific and religious societies and founded the *Lutheran Observer* in 1831, which he edited until 1833. Among his many publications are *Catechumen's and Communicant's Companion* (1831); *Life of John Arndt* (1853); *Fifty Years in the Lutheran Ministry* (1878); *Memoirs of the Stork Family* (1886); etc.

MOR'RIS, Lewis: 1671-1746, May 21; b. New York. He obtained a legal education, and rose rapidly in his profession, becoming judge of the superior court of N. J. when only 21 years of age. He was also a member of the council, and later entered the assembly, where he drafted the complaint of that body against Governor Cornbury. He was for a long period chief justice of New York and New Jersey, state councilor 28 years, and governor of New Jersey from 1738 till he died. He was influential in the separation of New York and New Jersey. He died at Kingsbury, N. J.

MOR'RIS, Lewis: 1726-1798, Jan. 22; b. Morrisania, N. Y.; half-brother of Gouverneur Morris, and signer of the Declaration of Independence. He graduated from Yale 1746, conducted for some years the affairs of his extensive estate, but by the course of events was drawn into public life. He was outspoken against British tyranny, served in the continental congress 1775-77, was member of a committee on ways and means to obtain necessary supplies, and was active in inducing the Indians to leave the British and join the colonists. He labored to arouse public interest in the cause of liberty. His estate was pillaged by the British, who not only ruined his buildings and carried off his stock, but also burned a thousand acres of his woodland. After his retirement from congress 1777, he was a member of the state legislature and major-general of militia. On the return of peace he attended to the restoration and cultivation of his estate. He died at Morrisania, N. Y.

MORRIS, Sir Lewis: Welsh poet: b. Carmarthen, Wales, 1833, Jan. 23; d. London, 1907, Nov. 12. He was educated at Oxford, studied law and was admitted to the bar of Lincoln's Inn in 1861, practicing his profession until 1881. He was deputy chancellor of the University

of Wales and prominently associated with the cause of education in Wales. In 1895 he was knighted. His verse is fluent, but deficient in strength, and has been very popular, his *Epic of Hades* (1876-7) going through many editions. Other volumes of his verse are *Songs of Two Worlds* (1872-5); *Gwen: a Drama in Monologue* (1879); *The Ode of Life* (1880); *Songs Unsung* (1883); *A Vision of Saints* (1890); *Harvest Tide* (1901); etc.

MOR'RIS, Lewis Owen: 1824, Aug. 14—1864, June 3; b. Albany, N. Y. He served as 2d lieut. in the war with Mexico, and reached the rank of capt. 1860. At the opening of the civil war he was in command of a battery in Texas—the only one in that region that remained loyal to the Union. He captured Fort Macon, N. C., and was soon appointed colonel of the 113th regiment N. Y. volunteers, which guarded the city of Washington when it was threatened with invasion by Gen. Lee. In accordance with his earnest wish to enter the field, Col. Morris was, 1864, assigned with his regiment to the Army of the Potomac, in which he commanded a brigade. He was killed while leading and cheering his troops as they were making an assault at the battle of Cold Harbor, Va.

MORRIS, Mary Philipse: American Tory: b. Philipse Manor, N. Y., 1730; d. York, England. She was one of the famous Philipse family, daughter of the second lord of the Manor, Frederick Philipse. A beautiful brunette, she is the original of Cooper's heroine in *The Spy*, and was long said to be one of George Washington's loves; but the story that she rejected him is untrue. Two years after meeting Washington she married George Morris (1758), with whom she lived in what was afterward Washington's headquarters and the Jumel house. Her property was confiscated at the opening of the Revolution, and she went to England. Her surviving children, being free from attaint according to the ruling of the English attorney-general, sold their rights to John Jacob Astor for £20,000; and the British government paid them £17,000 more for their losses.

MOR'RIS, Robert: 1734, Jan. 20—1806, May 8; b. Liverpool, Eng. His father brought him to Philadelphia 1747 and placed him in the counting-house of Charles Willing of that city. Upon the death of Mr. Willing his son formed, 1754, a partnership with Morris, which, under the name of Willing & Morris, continued till 1793. The Stamp Act was opposed by Morris, and against his financial interests he signed, 1765, the non-importation agreement. He was a member of the continental congress 1775, voted against the Declaration of Independence 1776, July 1, and declined to vote July 4, but when the instrument was formally adopted he gave it his signature. He was re-elected to congress 1777, and again the succeeding year. During the war his services to the government were invaluable. He not only labored with zeal and

efficiency on the committee of ways and means, but also brought his immense personal credit to the help of the cause. Through him Gen. Green was supplied, 1780, with materials for his campaign, and $1,400,000 was raised to help Washington in the movements which brought success to the patriot cause at Yorktown. He originated the Bank of North America, which was opened 1782, under a charter from congress, and to which he subscribed $10,000. He was superintendent of the national finance 1781-84, and freely used his means and credit to advance the public interest. He was, 1786, a member of the Pennsylvania legislature, and the next year was sent to the convention which framed the constitution of the United States. He was elected 1788 to the first senate of the new nation, and held his seat in that body till 1795. The office of secretary of the treasury, offered him by President Washington on the formation of his first cabinet, was declined, with the recommendation that Alexander Hamilton be appointed. With Gouverneur Morris (q.v.) he engaged in the East India trade, and afterward speculated in land, which proved his financial ruin. He was sent to the debtor's prison, Philadelphia, 1798, where he remained till the national bankrupt law of 1802 opened the way for his release. From some inherited interests in a land corporation, his wife had secured a life annuity of $2,000, and with this she provided a home for his declining days. His letters appear in Sparks's *Diplomatical Correspondence of the American Revolution;* the *Life of Morris* was published 1834, and a work on the *Financial Administration of Robert Morris* appeared 1878. He died at Philadelphia.

MORRIS, Thomas: American statesman: b. Augusta co., Va., 1776, Jan. 3; d. Bethel, O., 1844, Dec. 7. He removed in 1795 to Columbia, O., and was employed by the Rev. John Smith, the first senator from Ohio. He fixed his residence in 1800 in Clermont county, studied law, was admitted to the bar, was a member of the state legislature from 1806 to 1830, was a judge of the state supreme court (1815-21), and in 1832 was elected to the United States senate, where he distinguished himself as an opponent of slavery, and was engaged in important debates with Calhoun and Clay in defense of the right of petition and of the duty of the general government to discourage slavery. His anti-slavery sentiments rendered him distasteful to the Democratic party, by which he had been elected, and he permanently retired in 1839, Mar. In 1844 he was nominated for vice-president by the Buffalo convention of the Liberty party, on the ticket with J. G. Birney for president.

MORRIS, William: English poet and artist: b. Walthamstow, Essex, 1834, Mar. 24; d. Hammersmith, London, 1896, Oct. 3. He was educated at Marlborough College and Oxford University, and was for some nine

months a pupil in the office of the noted architect, George Edmund Street. In 1856 he founded *The Oxford and Cambridge Magazine*, to which he contributed often, and which he published at his own expense for the year it was issued. Two years later (1858) appeared *The Defense of Guinevere and Other Poems*, in the pages of which the temper of the Middle Ages may be said to find its most accurate modern interpretation. In 1867 he published the *Life and Death of Jason*, an epic of 17 cantos in heroic couplets, which showed him to be a teller of stories *par excellence*. By this time he had definitely entered upon his career of weaver anew of old tales from classic or mediæval sources, and the next year (1868) appeared the first volume of *The Earthly Paradise*, a series of stories retold from classical and mediæval originals, but with a mediæval setting. A second and third volume followed in 1869 and 1870, the entire work comprising 24 tales, with the addition of interludes and preludes and 12 lyrics of the months. In *The Earthly Paradise*, as in the *Jason*, Morris took Chaucer for his master as well in the structure of his verse as in what may be termed the processional nature of his descriptive passages. Three verse forms are employed by him, the seven-lined decasyllabic stanza known as the Chaucerian heptastitch, the four-foot couplet and the heroic couplet. *The Earthly Paradise* includes some 40,000 lines, but when once the reader has fallen under the poet's sway his leisurely manner will not be found wearisome. In *The Lovers of Gudrun*, one of the tales of *The Earthly Paradise*, Morris had already turned to Iceland for a theme, and in *The Story of Sigurd the Volsung and the Fall of the Niblungs* (1876) he returned to Icelandic myth for his subject. The poet regarded this poem as his masterpiece, and in the opinion of not a few critics it ranks as almost the greatest, if not the greatest epic of the 19th century. In his hands the ancient myth becomes alive and throbs with all the intensity of primeval passion. Beside these works Morris published also in verse *Love is Enough, or the Freeing of Pharamond* (1873); *The Æneids of Virgil Done Into English Verse* (1875), in which the metre adopted is that of Chapman's Homer; *The Odyssey of Homer Done Into English Verse* (1887); *The Dream of John Ball* (1888); and *Poems by the Way* (1892). In 1863 Morris began the manufacture of wall paper, stained glass, and artistic furniture, and to his labors in this particular is traceable much of the reform which English and American trade has experienced in household art during the last generation. In 1890 he established the Kelmscott Press at Hammersmith, and there published exquisitely printed editions of Chaucer, Beowulf and other works, as well as of his own writings. Still another side of his nature was shown in the trend of his human sympathies. He had long been known as poet and craftsman, but from 1885 he was active as a

social reformer, lecturing frequently to workingmen in halls or in the open air, and helping to support the *Commonwealth*, a socialistic journal. It is not wholly easy to understand this side of his nature, for intensely democratic as he became, in theory at least, he was an equally intense lover of that very beauty which a social upheaval would destroy. The ugliness of much of modern life led him to socialism, but he was thoroughly sincere in his attitude, illogical as it may seem to many. However difficult it may be to adjust satisfactorily to our minds the attitude of the poet-socialist with the character of his work as a craftsman, which was offered to the world at prices practically prohibitory to the majority of persons, it is an unquestionable fact that the world is a pleasanter, wholesomer world for his having lived in it. He helped his generation to perceive that there is no necessary alliance between utility and ugliness; he raised the standard of household taste, and as a poet he was one of the most melodious of his time. In his later years he essayed a form of composition in mingled prose and verse greatly enjoyed by many, though perhaps not wholly to the taste of those who liked him best as the author of *The Earthly Paradise* and *Sigurd*—a series of romances beginning with *The Tale of the House of the Wolfings* (1889) and succeeded by *The Roots of the Mountains* (1890); *News from Nowhere* (1891); *The Story of the Glittering Plain* (1891); *The Wood Beyond the World* (1894); *The Well at the World's End* (1896); *The Water of the Wondrous Isles* (1897). With Erikir Magnusson, the Icelandic scholar, he published *The Story of Grettir the Strong* (1869); *Volsunga Saga* (1870); and *Three Northern Love Stories and Other Tales* (1875). Still other works by him are *The Decorative Art* (1878); *Hopes and Fears for Art* (1882); *Signs of Change*, seven lectures (1888); with Belfast Bax, *Socialism: Its Growth and Outcome* (1893); *Architecture, Industry and Wealth* (1903). Morris' socialistic theories prevented his receiving the offer of the laureateship on the death of Tennyson, but that he would have accepted it is quite unlikely. He was a devoted admirer of mediæval architecture and his account in the *Earthly Paradise* of the front of Peterborough cathedral is one of the finest descriptions of an architectural feature to be found in English literature. He wrote the excellent monograph on *Mural Painting* in the ninth edition of the *Encyclopædia Britannica*. Consult: Vallance, *William Morris: His Art, etc.* (1897); Mackail, *The Life of William Morris* (1899); Cary, *William Morris, Poet, Craftsman and Socialist* (1902); Riegel, *Die Quellen von William Morris's Dichtung, The Earthly Paradise* in Erlanger *Beiträge zur englischen Philologie* (1890).

MORRIS, William O'Connor: Irish jurist and author. He was educated at Oxford, was admitted to the Irish bar in 1854 and has been a county court judge from

1872. He is the author of *Great Commanders of Modern Times; Napoleon; Moltke; Irish History; Hannibal; Ireland: 1798-1898; Present Irish Questions;* etc.

MORRIS, William Walton: 1801, Aug. 31—1865, Dec. 11; b. Ballston Springs, N. Y. He graduated from West Point 1820, was engaged in the Seminole war, the war with Mexico, served on the frontier during the Kansas troubles, and won various promotions. He was appointed colonel 1861, and placed in command of Fort McHenry, Baltimore. By prompt and decisive action he suppressed the riots in that city at the opening of the civil war 1861, Apr. 19. He was brevetted brigadier-general 1862, and on the day preceding his death was promoted brevet major-general. He died at Fort McHenry.

MORRIS, n. or Morrice, n. *mŏr'rĭs*, or Morris-dance [F. *moresque;* It. *moresca*, a Moorish dance: Sp. *morisco*, Moorish—from *Moro*, a Moor]: originally a Moorish dance; fantastic dance, common in the later middle ages, and not yet wholly forgotten in England: the country-dance of the same name, still popular in northern England, is not the same, though it may retain a few elements of the Morris. The Morris with the May-games was abolished by the Puritans. Its origin is ascribed to the Moors. The chief performer was the *hobby-horse*, so called from the light frame of wickerwork which was fastened round his body, and supplied with a pasteboard head and neck, to give him the appearance of a man on horseback. Bells were also attached to his ankles. Other actors, after a rude fashion, personified the characters of Maid Marian, the Queen of the May, Robin Hood, etc.; and the performance was accompanied by rude music. Nine-men's-morrice, a kind of play with nine holes in the ground.

MORRIS ISLAND: low island, 3½ m. long, at the entrance of the Charleston, S. C., harbor. At Cumming's Point, the northern part of the island, a battery was located which took part in the opening siege of the Civil war, which resulted, 1861, Apr. 13, in the surrender of Fort Sumter to the Confederate forces. Fort Wagner and other defenses of the city of Charleston were then constructed on this island. The Union forces succeeded in capturing the southern end of the island 1863, July 10, but Fort Wagner resisted repeated assaults, and a siege, which proved one of the most remarkable of the war, was begun. Five parallels were opened, the sappers and miners being protected by batteries which fired over their heads and kept up a constant attack upon the fort. Valuable assistance was also rendered by the naval vessels stationed in the channel. A favorable position having been gained, the final attack was opened Sep. 5. A terrific bombardment, continued 42 hours, caused the garrison to evacuate the fort, which was occupied by the

Union troops on the morning of Sep. 7. The operations were continued at night by the aid of brilliant calcium lights. After the capture of the island it was used as the seat of batteries for the bombardment of Charleston, 4 m. away, and to prevent Confederate occupation of the site of Fort Sumter. The famous Parrott rifle, known as the *Swamp Angel*, was located on a marsh near the island.

MOR'RISON, *mŏr'ĭ-son*, ARTHUR: English author: b. 1863. He was for a number of years secretary to a charity-trust in London's East End, and there made the studies utilized in his *Tales of Mean Streets* (1895); and *The Child of Jago* (1896). He wrote also: *Martin Hewitt, Investigator* (1896), detective stories; *The Dorrington Deed-Box* (1897); *To London Town* (1899); *Cunning Munell* (1900); *The Hole in the Wall* (1902); *The Red Triangle* (1903); *The Green Eye of Goona* (1904); *Divers Vanities* (1905); etc.

MORRISON, HENRY CLAY, D.D.: American Methodist (South) bishop: b. Montgomery co., Tenn, 1842, May 30. He was educated in the public schools and after teaching for several years entered the ministry in 1865. He has held important charges in Louisville, Ky., and Atlanta and was missionary secretary in 1890-8 when he raised $140,000 for the board of missions. He was appointed bishop in 1898.

MORRISON, JAMES DOW, A.M., D.D., LL.D.: American Protestant Episcopal bishop: b. Waddington, N. Y., 1844. He was graduated from McGill University, Montreal, in 1865, took orders in the Episcopal ministry and after holding rectorates at Herkimer and Ogdensburg, N. Y., was consecrated first missionary bishop of the diocese of Duluth in 1897. He has published *Fundamental Church Principles* (1899).

MORRISON, JOHN TRACY: American lawyer and politician: b. Jefferson co., Pa., 1860, Dec. 25. He was graduated from the University of Wooster, Ohio, in 1887, and from the law department of Cornell University in 1890. In the latter year he moved to Caldwell, Idaho, where he established his law practice. In the campaign of 1896 he was secretary of the Republican state committee, and in 1896 and 1900 Republican candidate for congress, but was not elected. From 1897 to 1900 he was chairman of the state committee, and in 1902 was candidate for governor of Idaho, and was elected for a two years' term.

MORRISON, ROBERT, D.D.: founder of Protestant missions in China: 1782, Jan. 5—1834, Aug. 1; b. Morpeth, Northumberland, of Scottish parentage. He studied at the Congregational College at Huxton, and 1805 he was sent to Macao and Canton by the London Missionary Society, to learn the Chinese language, and to translate the Bible into it. He reached Canton 1807, Sep., and in

the course of a year was appointed translator to the East India Company's factory at Canton. In 1814 he had completed the translation and printing of the whole New Testament. Four years later, by the help of Mr. (afterward Dr.) Milne, he had done the same with the Old Testament; and 1822, he completed and printed his great *Chinese Dictionary* at an expense to the East India Company of £15,000. Thus Morrison's work supplied the indispensable foundation for Christian effort in that vast empire. In 1816, he acted as interpreter to Lord Amherst. In 1818, he established an Anglo-Chinese College at Malacca for English and Chinese literature, and for the propagation of Christianity. After a residence of 17 years in China, he returned to England 1824, brought with him a collection of 10,000 Chinese books, and addressed large and enthusiastic audiences in behalf of Chinese mission-work. In 1826, he returned to China. In 1834, he accompanied Lord Napier to Canton as interpreter, and died there. Besides the works already mentioned, he is author of *Horæ Sinicæ* (London 1812), translations from the popular literature of the Chinese; *Chinese Grammar* (Serampore 1815), and *Chinese Miscellany* (1825). In 1839, his widow published *Memoirs of the Life and Labors of Robert Morrison.*

MORRISON, Theodore Nevin, D.D., S.T.D.: American Protestant Episcopal bishop: b. Ottawa, Ill., 1850, Feb. 18. He was graduated from Illinois College, Jacksonville, Ill., in 1870, studied for the ministry at the General Theological Seminary, and took priest's orders in the Episcopal Church in 1874. After being rector of St. Paul's Church, Pekin, Ill., 1874-6; and of the Church of the Epiphany in Chicago, 1876-99, he was consecrated bishop of Iowa in 1899, Feb.

MORRISON, William Ralls: b. 1825, Sep. 14, in Monroe co., Ill. He graduated from McKendree College, and after serving in the Mexican war as a private, studied law, was clerk of the county court four years, in the state legislature three years, and speaker of that body 1859. He commanded the 49th Illinois regiment in the Civil war until 1863, when he entered congress as a Democrat. He was twice a defeated candidate for reelection, but was returned 1872, taking his seat the following year and serving till 1887. In 1873-5 he was chairman of the ways and means committee. He has long been an earnest advocate of tariff reform, and largely on that issue was defeated for congress in the election of 1886. He has been a delegate to two national political conventions—the union 1866, and the democratic 1868. He was a member of the Interstate Commerce Commission, 1887-97, and chairman of the commission, 1891-7.

MOR'RISTOWN: city, county-seat of Morris co., N. J.; on the Delaware, Lackawanna & Western, the Whippany River and the Rockaway Valley railroads; about 16 m.

w. of Newark. It is situated in an agricultural region in which market gardening and fruit growing receive considerable attention. It was settled in 1709-10 and was called West Hanover. In 1740 the name was changed to Morristown in honor of Lewis Morris (q.v.), the colonial governor of New Jersey. It was incorporated in 1865. It is about 700 feet above sea-level and overlooks a beautiful section of country. The place figured prominently in the Revolution; in 1777, from Jan. to May, and from 1779, Dec., to 1780, June, Morristown was Washington's headquarters. The old Ford mansion, which he occupied, is now owned by the 'Washington Association,' who preserve here numerous mementoes of Revolutionary and pre-Revolutionary times. It was here that Samuel F. B. Morse (q.v.) and his associate, Alfred Vail, worked on the electric telegraph experiments about 1837. The shaft of the Savannah, the first steamboat to cross the Atlantic, was cast at the old Speedwell Iron Works.

Morristown is largely a residential city; its climate, scenery, and easy access to the cities of New York, Jersey City and Newark make it a desirable location for the homes of city business men. It has considerable trade and ships considerable quantities of flowers, fruit, and vegetables. Some of the prominent buildings are the Young Men's Christian Association and the Young Men's Catholic Association buildings, and All Soul's and the Memorial hospitals. There is a beautiful and well-kept park, in which a soldiers' monument has been erected. A monument marks the site of Fort Nonsense, erected by Washington. The city has public and parish schools, and a public library and lyceum. At Morris Plains, about 4 m. n.e. of the city, is a state hospital for the insane, and which cost about $3,000,000. Pop. (1910) 12,507. Consult: Tuttle, *History of Morristown;* Colles, *Authors and Writers Associated with Morristown* (1893).

MORRISTOWN: city and county-seat of Hamblen co., Tenn., about 40 m. n.e. of Knoxville; on the Southern and the Morristown & Chattanooga railroads. It has manufactures of tobacco, flour, wagons, agricultural implements, stoves, lumber, etc. It is also a large stock market, and the iron and lead mines and marble quarries in the vicinity add to the importance of its industrial interests. It is the seat of the Morristown Normal College for negroes.

During the Civil war Morristown was the scene of two engagements. On Dec. 10, 1863, Colonel Garrard's Union cavalry brigade attacked Gen. W. E. Jones' cavalry brigade in works here, and drove it out of them and from the town. Four days later Col. W. J. Palmer, commanding the Anderson (Pa.) cavalry, had a skirmish near the town with a part of General Martin's cavalry brigade of five regiments, and withdrew, leaving Martin in possession of the place. On Oct. 28, 1864, the town was held by Gen. John C. Vaughn's brigade of Confed-

erate cavalry. Vaughn was attacked that day by Gen. A. C. Gillem, with a brigade of Union Tennessee cavalry. Vaughn was falling back to a more favorable position, when Gillem charged his right and centre and stampeded the entire brigade, which fell back in disorder to Russellville. Gillem took 224 prisoners, including 19 officers, four guns and caissons, part of the ammunition train, and about 300 stand of small arms. The Union loss was 8 killed and 18 wounded. Pop. (1910) 4,007.

MORROW, n. *mŏr'rō* [Goth. *maurgins,* morn: OE. *morwe* or *morwen,* morn (see MORNING)]: the first day after the present one. GOOD MORROW or GOOD MORNING, a term of salutation. TO-MORROW, the first day after the present.

MORROW, THOMAS VAUGHAN: American eclectic physician: b. Fairview, Ky., 1804, Apr. 14; d. Cincinnati, Ohio, 1850, July 16. Educated at Transylvania University of Lexington, Ky., and graduated in medicine from the Reformed Medical College of the City of New York. He was the pioneer promoter and organizer of medical eclecticism in the West. He established the Reformed Medical College of Ohio at Worthington, Ohio, 1830; the Reformed Medical School of Cincinnati in 1842; the Eclectic Medical Institute at Cincinnati, Ohio, in 1845; was editor of the first eclectic medical journal, and author (with Dr. I. G. Jones) of Jones and Morrow's *Practice of Medicine* (eclectic). Dr. Morrow was the first president of the National Eclectic Medical Association.

MORS, *mawrss:* island belonging to Denmark, largest one of the group in the Lym-fiord, s. of Jutland; nearly 24 m. long and about 11 m. broad. Nearly one-third of its surface is low and wet. The remainder is a fertile tableland. Nykjöbing (or Nyekiobing), on the eastern coast, is the largest town. Pop. of island (about) 6,000.

MORSE, n. *mŏrs* [Russ. *morj*]: the sea-horse or walrus: see WALRUS.

MORSE, n. *mŏrs* [L. *morsus,* a biting, a catching fast]: in *eccles. costume,* the clasp or fastening of a cope, frequently made of the precious metals and set with jewels.

MORSE, *mowrs,* EDWARD SYLVESTER, A.M., PH.D.: American naturalist and orientalist: b. Portland, Me., 1838, June 18. He was educated at the Lawrence Scientific School, Harvard University; taught zoology and comparative anatomy at Bowdoin College 1871-4, and at the Imperial University at Tokyo, Japan, 1877-80; and in this way added to his reputation as a zoologist a remarkable intimacy with Chinese and Japanese art, especially ceramics, and with the folklore and early archæology of the two countries. His collection of Japanese pottery is now in the Boston Museum of Fine Arts; it keeps his name and he is its curator. In 1881 Morse be-

came director of the Peabody Academy of Sciences, of which he was one of the founders. He wrote: *Early Stages of Terebratulina* (1870); *Embryology of Terebratulina* (1872), and other studies showing the non-molluscous character of the brachiopods; *First Book in Zoology* (1875, and in German and Japanese versions); *Early Races of Man in Japan* (1879); *Japanese Homes and Their Surroundings* (1886); *Glimpse of China and Chinese Homes* (1902); *Mass and Its Mystery* (1906); etc.

MORSE, Jedediah, D.D.: 1761, Aug. 23—1826, June 9; b. Woodstock, Conn. He graduated from Yale College 1783, taught school while studying theology, was for a short time tutor in Yale College, had a brief pastorate at Medway, Ga., and was pastor of a Congregational church, Charlestown, Mass., 1789-1820. In the latter year he changed his residence to New Haven, and for two years, under appointment by the secretary of war, was engaged in investigating the condition of the Indian tribes in that vicinity. He was a staunch defender of the old faith in the days of the Unitarian defection, was one of the founders of the Andover Theological Seminary, and was active in securing the organization of the Park Street Church, Boston, on a Trinitarian basis. For five years from 1805 he edited the *Panoplist*. He published the first American text-book on geography, and followed it by several other works on the same science which were very popular. With the Rev. Elijah Harris he published a *History of New England*. He published many sermons and addresses, and *Annals of the American Revolution*. He died at New Haven.

MORSE, John Torrey: American historian: b. Boston, 1840, Jan. 9. He was graduated from Harvard in 1860, and was lecturer on history there from 1876 to 1879. For two years he was associated with Henry Cabot Lodge in the editorship of the *International Review*. He also studied and practiced law in Boston for a time. His literary work has been chiefly in historical biography, and he has edited the *American Statesman* series, which is ranked among the best biographical works for the interpretation of American history. For this series he has written: *Abraham Lincoln* (1893); *Benjamin Franklin* (1889); *John Adams* (1884); *John Quincy Adams* (1883); and *Thomas Jefferson* (1883); his other works include: *Life of Alexander Hamilton* (1876); *Life and Letters of Oliver Wendell Holmes* (1896); and *Life and Letters of Col. Henry Lee* (1906). He has also written *Treatise on the Law Relating to Banks and Banking* (1870); *Law of Arbitration and Award* (1872); *Famous Trials* (1874); etc.

MORSE, Samuel Finley Breese, LL.D.: inventor of the electric telegraph: 1791, Apr. 27—1872, Apr. 2; b. Charlestown, Mass.; son of Jedediah Morse, D.D. While

at Yale College, from which he graduated 1810, he gave considerable attention to painting. After studying for a few months under Washington Allston, he went with him to London, where he had instruction from Benjamin West. His plaster model of *The Dying Hercules* was awarded a gold medal by the Adelphi Society of Arts, and the painting of the same subject was (1813) considered one of the best 12 pictures exhibited at the Royal Academy. After working some years in Boston, and in Charleston, S. C., he removed 1823 to New York. Here he founded the National Academy of the Arts of Design, of which he was president for many years, and is said to have delivered the first series of lectures on the fine arts ever given in this country. For three years from 1829 he was in Europe studying art. He had long been interested in scientific matters, and while abroad became convinced that electricity might be made a means for conveying information. On his return voyage he made drawings of his afterward famous telegraph, and invented the alphabet of dots and dashes known by his name. On arriving at New York he made models of the instruments and continued his experiments. He was appointed 1835 professor of fine arts in the University of New York. In 1837 he exhibited an instrument by which an electrical current was passed through 1,700 ft. of wire; the same year, Sep. 28, he applied for a patent, and the following Dec. solicited help from the government in building a line to demonstrate the utility of his invention. He went, 1838, to Europe to enlist the aid of foreign powers, but beyond obtaining a patent in France, which, on account of its restrictions, proved practically useless, he had no success. He returned to New York, and for four years was in such poverty that he sometimes suffered for want of food. He had a few art pupils, painted portraits when he could obtain commissions, and continued his appeals to the government. In the spring of 1843 congress appropriated $30,000 for the construction of a trial line of telegraph. 1844, May 24, the first line, 40 m. in length, from Washington to Baltimore, was formally opened. Congress declined to purchase the patent for $100,000, but voted $8,000 to maintain the original line. A stock company was formed, and after a period of difficulty and litigation, the telegraph became a valuable property. Morse was given the degree of LL.D. by Yale College, was made a member of numerous scientific societies in this country and abroad, and was highly honored by numerous foreign powers. By careful experiments he demonstrated the feasibility of submarine cables, and with Professor Draper was the first successful photographer of living subjects. A bronze statue of Morse was erected 1871 in Central Park, New York. His last public appearance, 1872, Jan. 17, was at the dedication of the statue of Benjamin Franklin in Printing House Square, on which occasion he delivered

the address. Honors were showered upon him by European sovereigns and governments. In 1848, he received the decoration of the *Nishan Iftichar* in diamonds from the sultan of Turkey. Gold medals of scientific merit were awarded him by the king of Prussia (set in a massive gold snuff box), the king of Würtemberg and the emperor of Austria. From the emperor of the French he received in 1856 the cross of chevalier of the legion of honor; in 1857, from the king of Denmark the cross of knight of the Dannebrog; and in 1858 from the queen of Spain the cross of knight commander of the Order of Isabella the Catholic. The principal governments of Europe also jointly presented him with 200,000 francs.

MORSE, SIDNEY EDWARDS: 1794, Feb. 7—1871, Dec. 24; b. Charlestown, Mass.; son of the Rev. Jedediah Morse, D.D. He graduated from Yale College 1811, studied theology, and then took a law course at Litchfield, Conn. His contributions to the *Columbian Sentinel*, while he was a student, had attracted attention. A request from several prominent men that he would establish a religious journal led him 1815 to publish the *Boston Recorder* (Congregational), the first religious newspaper in the country, long since merged in the *Congregationalist*, in Boston. He then aided his elder brother in the invention and introduction of a flexible piston pump. In connection with his younger brother Richard C. Morse, he established 1823 the *New York Observer* (Presbyterian), of which for 35 years he was senior editor and proprietor. With Henry A. Munson he discovered and perfected a method of printing maps in various colors on a press. He also published some geographical text-books which had a large sale. The closing years of his life were largely given to the invention of an instrument called a bathyometer, for deep-sea soundings. He died in New York.—His brother, RICHARD CARY MORSE (1795, June 18—1868, Sep. 23; b. Charlestown, Mass.), graduated from Yale College 1812, studied theology, aided his father in his geographical labors, and 1823-58 was associated with his brother in the management of the *New York Observer*. 1858 he retired from business, and five years later removed to New Haven. He died at Kissingen, Bavaria.

MORSE, SIDNEY H.: American sculptor and editor: b. Rochester, N. Y., 1832, Oct.; d. San Mateo, Fla., 1903, Feb. 18. In youth he worked at marble-cutting, and acquired a taste for sculpture. Later he studied at Antioch College, and afterward began to preach in Unitarian pulpits in the West; still later made further preparation for the ministry at Harvard, and for some time was settled in Haverhill, Mass. In 1865 he became editor of the *Radical*, published in Boston as 'a medium for the freest expression of thought on all religious and social topics,' and conducted it with eminent ability until

1872. The *Radical* was a worthy successor, after a long interval, of the famous *Dial*, and Morse counted among his friends and contributors Emerson, A. B. Alcott, Samuel Johnson, Samuel Longfellow, and many others prominent in literature and reform, leaders in the progressive movements of the time. A man of genius and of winsome personality, he devoted himself through his magazine, with heroic self-sacrifice, to a task which appreciably furthered the aims of America's foremost thinkers and workers. When he discontinued the *Radical* he turned with enthusiasm to sculpture, and produced many notable works. He made a bust of Emerson, which is in the Second Church, Boston, the present edifice of the society to which Emerson ministered (1829-32), and another of the same subject, accepted by Emerson's friends as the best extant. His other subjects include Channing, Parker, James Martineau, Walt Whitman, Carlyle, Thomas Paine, Lincoln, Holmes, and many besides. During President Cleveland's first term he gave sittings to Morse for a statuette. In addition to his art work Morse wrote much for periodicals. One of his poems, *Sundered*, is to be found in Emerson's *Parnassus*, and a later writer says that if Emerson had known Morse as some knew him 'he would have niched him in his gallery of heroes.' Morse was also a welcome lecturer on many platforms, being equally gifted with voice and hand to instruct and entertain.

MORSE ALPHABET [after the inventor]: the dot and dash marks made by the recording instrument in telegraphy to indicate letters.

MORSEL, n. *mŏr'sĕl* [OF. *morcel* or *morsel*, a morsel —from mid. L. *morsellum*, a thing bitten, a mouthful—from L. *morsus*, a bite: It. *morsello*, a bite: F. *morceau*]: a bite; a mouthful; a small piece.

MORT, n. *mŏrt* [F. *mort*, death—from L. *mortem*]: in *hunting*, notes sounded at the death of game; the skin of a lamb that has died of disease: ADJ. fatal.

MORT, n. *mŏrt* [Icel. *margt*, much]: *colloquially*, a great quantity; a large amount; a salmon in its third year.

MORTAL, a. *mŏr'tăl* [OF. *mortal;* F. *mortel*—from L. *mortālis*, mortal—from *mortem*, death: It. *mortale*]: subject to death; destined to die; bringing death; belonging to man; deadly; punishable with death; not venial (see SIN; VENIAL); extreme: N. a human being; a creature subject to death. MOR'TALLY, ad. *-lĭ*, in a manner to cause death; in the highest possible degree. MORTALITY, n. *mŏr-tăl'ĭ-tĭ*, state of being mortal; subjection to death; frequency of death; death; human nature. BILLS OF MORTALITY, returns formerly issued periodically, giving the number of births and deaths in London. WITHIN THE BILLS OF MORTALITY, embraced or comprisable within those returns.

MORTALITY.

MORTAL'ITY, Law of: principle deciding the average duration of a multitude of human lives. While there are few future events the date of whose arrival is more uncertain than that of death to any one man, on the other hand, the average duration of a multitude of human lives is found to be in accordance with a law as sure as that of gravitation. If it be asked how many lives must we take into account before we can depend on deducing from them a duration equal to the actual general average, the only answer is, that the more we have the more nearly must we approach this result; the fluctuation ultimately becoming so small as to be practically of no effect. So long ago as early in the 17th c., a certain John Graunt of London published *Natural and Political Observations on the Bills of Mortality*, which has been called 'the earliest movement in economical arithmetic, and the closest approximation to the data on which life-assurance is founded.' About the same time, Sir William Petty gave to the world many curious calculations and speculations on the same subject. In 1693, Dr. Halley published the Breslau tables of mortality, the first work which really raised the subject to the rank of a science. Halley's speculations had, however, been preceded by those of Pascal in France, and of De Wit in Holland; and the latter famous man is probably entitled to be considered as the first who has applied the doctrine of probabilities to the valuation of life in the question of annuities. His treatise will be found in vol. II. of the *Assurance Magazine*. Halley's tables are printed in the *Philosophical Transactions* for 1693, No. 196. In 1713, J. Bernouilli's important work was published; and 1742, Dr. Price, availing himself of the principles laid down by Halley, and of data previously published by 'John Smart of Guildhall, London, Gent., gave tables of mortality for London. In 1746, M. Deparcieux published at Paris *Essai sur les Probabilités de la Vie Humaine*, in which he gave six valuable tables. In one of these, computed from the registers of different religious houses, it was shown, for the first time, that female life is superior in longevity to male. In 1770, appeared the first ed. of Price's *Observations on Reversionary Payments*. The speculations of Buffon, Simpson, and De Moivre about the same time were of much importance. Mortality tables are tables showing the operation of the law of mortality. The correct method of framing them is by analyzing and collating accurate and sufficiently extensive statistics of life and death. They enable us to form a fair estimate of the number of human beings who will die at the end of a given period out of a given number alive at the beginning of it; and hence, the chance of life and death to the individual, and the mean duration of life at any age. Tables showing the mean duration of life have been constructed in two ways: 1st, from statistics of deaths alone; and, 2d, from statistics of life and death. By the first plan, they would be deduced as follows: Suppose, on searching a parish register, that we found

recorded 100 deaths of children in their first year, we should assume that, on an average, ½ a year of life would have fallen to each. This gives 50 years of life among 100. If we found that 60 had died in their second year, assigning one year and a half to each, we should have $60 \times 1{\cdot}5 = 90$ years among the 60; and so on for every age up to the oldest on the register. The sum of all the years of survival, divided by the numbers who have survived, will give the mean duration of life from birth; and the sum of all the years of survival after a given age, divided by the numbers who have survived, will give the mean duration at the given age; in both cases as nearly as the data enable us to give it; but the data are insufficient. Suppose we found by a register for 1873 that 100 children had died in their first year and one man in his 96th, it is plain that, to make this ratio a fair one, there ought to have been as many births in 1778 as in 1873. If there have been only half as many born at the former date as at the latter, then we must put two lives into the calculation to make it correct; and we must proportion our results similarly at all intermediate ages. Again, suppose four deaths at age 23 to be registered, we cannot tell how many of those born in 1850 may have emigrated from one parish, nor do we know how many born elsewhere in that year may have come into it. For the rule and formula for obtaining the mean duration of life under the second method, which is an absolutely certain one, see LIFE, MEAN DURATION OF. The following are the tables now most generally used by assurance and annuity offices in Great Britain: I. The Northampton (Dr. Price's). This table was framed from the register of burials in the parish of All Saints, Northampton. 1735–80. Being constructed on deaths alone, it has, as was to have been expected, proved faulty. It gives the probabilities of life too low at the younger and middle ages; and those offices which still use it have some difficulty in keeping themselves right. II. The New Northampton (Nos. 1 and 2) constructed by Dr. Farr: see Eighth Report of the Registrar-gen. for England, pp. 277–348. No. 2 is based on the deaths alone in Northampton during the seven years 1838–44. In its results it agrees almost exactly with that of Dr. Price. No. 1 was deduced from a comparison of the deaths during 1838–44 with the census returns of 1841. It differs widely from No. 2 and from Dr. Price. By the two latter, the mean duration of life is respectively found as 24·88 years and 25·18 years. By No. 1, it is 37·5 years. III. The Carlisle. This table was constructed from observations made by Dr. Heysham at Carlisle, 1780–87. It is now generally understood that the mortality in towns is understated at ages 15–35, owing to the immigration of healthy men and women from the country. Again the female population of Carlisle was excessive during the period in question, and the extent of the observations was limited. Owing to these facts, this table gives rather too low a rate of mortality, and is a little irregular in its graduation. In

a table prepared by W. T. Thomson, Esq., in a Report on the Ministers' Widows' Fund of the Church of Scotland, 1861, he shows that the lives of the Scotch clergy are, as to duration, about half a year better up to the age of 44 than appears in the Carlisle; at 45, they are equal; and at 45 to 80, they are half a year worse. Thereafter they vary. The widows are half a year better up to the age of 61, equal at 62, and nearly so to the end. Probably the Carlisle gives a fair mortality rate for a population in healthful conditions. IV. The Government. These were computed by Mr. Finlaison on the lives of 22,000 nominees for government annuities. They are important chiefly as giving a view of the value of female life, but this view differs widely from those given either by the 'Experience' or by the 'English' table. At age 20, for instance, the mean duration of female life is, by the Government table, 5½ years more than the male; by the Experience, it is 4 years less. In some measure this wide divergence may perhaps be accounted for by the fact that the Government results are deduced from annuitants, the Experience from assured lives. The experience of late years has, however, led to some modification in the relative values of male and female life in government tables. V. The English (Nos. 1, 2, and 3). No. 1 is deduced from the living by the census of 1841, and from the deaths at corresponding ages in the same year: see 5th and 6th Reports of the Registrar-gen. for England, where the tables will be found, and their construction explained. No. 2 is deduced from the living in 1841, and from the deaths in the seven years 1838–44. No. 3 is deduced from the population in 1841 and 51, and on the deaths for the 17 years 1838–54; male and female life being calculated separately and in combination. These 'English' tables probably give the results of the average mortality of England more correctly than any others which we have. They are the result of enormous labor on the part of Dr. Farr. The observations were taken on the plan recommended by Prof. de Morgan and Griffith Davies. VI. The Experience. These were prepared by a committee of eminent actuaries on the data afforded by the combined experience of 17 life-assurance offices. The objections to which they are liable are, that certain lives having been more than once assured have appeared twice or oftener as elements in the calculation; that the average term over which the observation of the offices extends is only eight and a half years; and it is probable that the mortality which will prevail in assurance societies when they have reached maturity is somewhat understated: see letter by Dr. Farr in Appendix to 10th Report of Registrar-gen., p. 11. Further, the data for old ages were deficient, and this of course affects the whole. Many curious results are brought out by this table. It shows that 'town' *assured* life is, as to duration, superior to 'country'; that female *assured* life is on the whole inferior to male; and that Irish life

is worst of all. At age 20, 'town' mean duration is 41 years 2 months; country, 40 years 4 months; Irish, 34 years 11 months. The observations of the Standard Assurance Company do not, however, bear out these results; and they are doubtless so largely affected by the elements of *Care in Selection* as to render it impossible to found on them any conclusion of practical value. A new set of 'Experience' tables was published 1872, based on the mortality experiences of 20 offices, 10 English and 10 Scotch. They do not show any widely different results from the former Experience tables. These form a very valuable set of tables. They give the results of English and Scotch experience united, and of Scotch separately.

In all tables deduced from the experience of assurance and annuity societies, the fact of *selection* must not be lost sight of, either in using them for comparison, or as the basis of other tables. Actuaries, however, seem generally of opinion that the selection exercised by assurance societies does not really lower their rates of mortality below the general average; without selection, their rate would be above the general mean; for it will be observed that the public are continually selecting against the offices by offering inferior lives, and good lives often surrender their policies, while lives which have become bad hardly ever surrender. Again, the value of medical examination gradually disappears, and in ten years at most it is quite lost. Five to seven years is indeed now held by the assurance offices to exhaust its value: see Minutes of the House of Commons' Committee on Assurance Associations, 1853; and Life-contingency Tables by E. J. Farren, pp. iii—xiii. Though female life is, as a whole, undoubtedly superior in duration to male, yet as there are more critical periods in it, it is probable that the public may more frequently select it than male life against the societies. A valuable report on the Madras Military Fund (London, 1863) gives tables constructed on the mortality rates prevailing among the officers, wives, and widows interested in the fund. As they have been prepared by eminent men on very ample data, they will probably be very valuable to societies transacting business in India. The following is a view of the mean duration of life, at the beginning and at each decennial period, according to some of the tables mentioned above. In considering this it should be borne in mind that the U. S. census of 1900 showed such a lowering of the death rate that it was thought that life insurance companies would be obliged to reconstruct their mortality tables.

MORTALITY.

TABLE SHOWING THE 'MEAN DURATION' OF HUMAN LIFE, ACCORDING TO VARIOUS AUTHORITIES.

Age.	*Northampton*		*Carlisle.*		*Government.*		English Life Table. Dr. Farr.						Experience of Twenty Offices. Male Life.	Age.
	Male and Female combined. Dr. Price.		Male and Female combined. Dr. Heysham.		Female. Finlaison. 1829.		Male.		Female.		Male and Female combined.			
	Yrs.	Mos.	Yrs.	Mos.	Yrs.	Mos.	Yrs.	Mos.	Yrs.	Mos.	Yrs.	Mos.		
0	25	2	38	9	55	6	40	2	42	2	41	2	.....	0
10	39	9	48	10	51	1	47	1	47	10	47	5	50·29	10
20	33	5	41	6	44	0	39	11	40	10	40	4	42·06	20
30	28	3	34	4	37	7	33	2	34	3	33	8	34·68	30
40	23	1	27	7	31	1	26	6	27	9	27	2	27·40	40
50	18	0	21	1	24	4	20	0	21	1	20	7	20·31	50
60	13	3	14	4	17	4	13	7	14	5	14	0	13·83	60
70	8	7	9	2	11	0	8	6	9	0	8	9	8·50	70
80	4	9	5	6	6	6	4	11	5	2	5	1	4·72	80
90	2	5	3	3	2	10	2	9	2	10	2	9	2 36	90
100	0	0	2	3	0	6	1	6	1	6	1	6	*0·93	100
	Both Sexes.		Both Sexes.		F'male Life.		Male Life.		F'male Life.		Both Sexes.			

* At 95.

AMERICAN TABLE OF MORTALITY.

The following table of mortality is based on the American experience, as developed by the use and adopted for the guidance of the leading life-insurance companies. It shows how many out of 100,000 persons at the age of 10 will be living at the beginning of each succeeding year; how many will die during any given year; and the expectation of life at the opening of any year of age from 10 to 95 inclusive:—

Age.	Number Living.	Number Dying Each Year.	Expectation of Life.	Age.	Number Living.	Number Dying Each Year.	Expectation of Life.
10	100,000	749	48·72	23	90,471	720	40·17
11	99,251	746	48·08	24	89,751	719	39·49
12	98,505	743	47·45	25	89,032	718	38·81
13	97,762	740	46·80	26	88,314	718	38·12
14	97,022	737	46·16	27	87,596	718	37·43
15	96,285	735	45·50	28	86,878	718	36·73
16	95,550	732	44·85	29	86,160	719	36·03
17	94,818	729	44·19	30	85,441	720	35·33
18	94,089	727	43·53	31	84,721	721	34·63
19	93,362	725	42·87	32	84,000	723	33·93
20	92,637	723	42·20	33	83,277	726	33·21
21	91,914	722	41·53	34	82,551	729	32·50
22	91,192	721	40·85	35	81,822	732	31·78

AMERICAN TABLE OF MORTALITY (*Continued*).

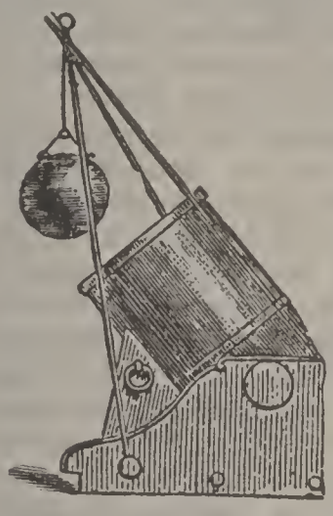
Age.	Number Living.	Number Dying Each Year.	Expectation of Life.	Age.	Number Living.	Number Dying Each Year.	Expectation of Life.
36	81,090	737	31·07	66	47,361	2,070	10·54
37	80,353	742	30·35	67	45,291	2,158	10·00
38	79,611	749	29·62	68	43,133	2,243	9·47
39	78,862	756	28·90	69	40,890	2,321	8·97
40	78,106	765	28·18	70	38,569	2,391	8·48
41	77,341	774	27·45	71	36,178	2,448	8·00
42	76,567	785	26·72	72	33,730	2,487	7·55
43	75,782	797	26·00	73	31,243	2,505	7·11
44	74,985	812	25·27	74	28,738	2,501	6·68
45	74,173	828	24·54	75	26,237	2,476	6·27
46	73,345	848	23·81	76	23,761	2,431	5·88
47	72,497	870	23·08	77	21,330	2,369	5·49
48	71,627	896	22·36	78	18,961	2,291	5·11
49	70,731	927	21·63	79	16,670	2,196	4·74
50	69,804	962	20·91	80	14,474	2,091	4·39
51	68,842	1,001	20·20	81	12,383	1,964	4·05
52	67,841	1,044	19·49	82	10,419	1,816	3·71
53	66,797	1,091	18·79	83	8,603	1,648	3·39
54	65,706	1,143	18·09	84	6,955	1,470	3·08
55	64,563	1,199	17·40	85	5,485	1,292	2·77
56	63,364	1,260	16·72	86	4,193	1,114	2·47
57	62,104	1,325	16·05	87	3,079	933	2·18
58	60,779	1,394	15·39	88	2,146	744	1·91
59	59,385	1,468	14·74	89	1,402	555	1·66
60	57,917	1,546	14·10	90	847	385	1·42
61	56,371	1,628	13·47	91	462	246	1·19
62	54,743	1,713	12·86	92	216	137	·98
63	53,030	1,800	12·26	93	79	58	·80
64	51,230	1,889	11·67	94	21	18	·64
65	49,341	1,930	11·10	95	3	3	·50

In the present article, we have considered the law of mortality, chiefly as it bears on insurance and other monetary transactions: see Insurance (*Life*). For the wider view of the subject, as varying with occupation and in different ages and countries, see Vital Statistics.

MORTAR, n. *mŏr'tĕr* [L. *mortārĭŭm;* It. *mortaro;* F. *mortier*, a mortar: Low Ger. *murt*, what is crushed or ground; *murten*, to crush, to mash]: a strong, wide-mouthed vessel in which substances are bruised or pounded with a pestle; a short piece of ordnance of large bore, used for throwing bombs and shells—so named from its original resemblance to the mortar in which substances were pounded (see below). Mortar-bed, the bed or carriage of wood on which a mortar for war rests. Mortar-vessel, class of gun-boat for mounting sea-service mortars. *Mortar-boats* were smaller vessels. The earliest mortar-vessel was the 'bomb-ketch,' convenient because of the length of deck without a mast. To resist the recoil, mortar-vessels had considerable breadth in proportion to length: the mortar was slung amidships in a massive 'bed.' Mortar-vessels are now scarcely used; though mortars are still carried on some war-ships.

MORTAR, n. *mŏr'tĕr* [L. *mortārĭŭm;* F. *mortier;* Ger. *mortel,* mortar — so called from the materials being pounded up together ; Dut. *mortel,* gravel, brick-dust : connected with MORTAR 1] : a mixture of lime, sand, and water, used as a cement for building with stones or bricks : see CEMENT.

MOR'TAR : piece of artillery differing from a cannon in the large diameter of its bore in proportion to its length, and in the fact that it is usually fired at a considerable angle, so that the projectile may strike the object aimed at in a direction more or less vertical. Mortars are intended for discharge of Live SHELLS (q. v.) or carcasses. As the projectile has a large diameter, and, except in rare instances, a very great range is unnecessary, a comparatively small charge of powder is requisite. To give this its utmost power and concentration, it is confined in a hemispherical chamber at the lower end of the bore, but of less diameter. The shell completely closes this chamber ; and, when the explosion ensues, receives its full force on its centre. Ordinary mortars range in diameter of bore from 5 to 13 inches. The 13-inch M. is shown in the annexed figure. Larger mortars have been tried at times, as at the siege of Antwerp Citadel 1832, when the French brought one of 24 inches bore to the attack. This monster, owing to its unwieldiness and other causes, was a failure. Larger still than this, though perhaps more manageable, is Mallet's great 36 inch M., constructed 1855, of iron parts welded together, and now at Woolwich, England, rather as a curiosity than for use. As loaded shells are of immense weight, so heavy, indeed, as in larger calibres to require the apparatus depicted in the fig. to deposit them in their places, and the M. is fired at high elevations, the recoil is so great and so nearly vertical that no carriage could withstand the shock ; it is necessary, therefore, that the M. should be mounted on a solid iron or timber bed, by the trunnions, which are placed behind the breech, and supported in front by massive blocks of wood. This arrangement renders the apparatus so heavy that mortars of large size are rarely used in field operations, their ordinary positions being in defensive or siege works, and in mortar-vessels. More wieldy are the Coehorn mortars, invented by the Dutch engineer of that name, for clearing the covert-way or ditch of a fortress. This M. is sufficiently small to be managed by one man, and is accounted useful in siege or defense operations The French use a similar Lilliputian ordnance, called pierriers or stone-throwers. The use of mortars is much less important than formerly, elongated shells of great weight being now thrown from rifled cannon. But for



13-Inch Mortar, with Loading Apparatus.

bombarding fortresses and naval arsenals, mortar-shells are more efficient than horizontal or howitzer shells fired from the pivot guns of steam-frigates.

MORTARA, Edgar: Jewish boy, whose case attracted great and painful interest throughout Europe. 1858, June 23, Signor Momolo M., manufacturer and wholesale merchant of cloth in Bologna, and by religious profession a Jew, returning home at night, found his house in the possession of the police, who informed him that they had orders from the inquisitor-in-chief at Bologna, to carry off his son, Edgar, who had been surreptitiously baptized into Christianity by a Rom. Cath. maid-servant. The inquisitor was waited upon, a little after midnight, by some friends of the family who implored delay. He informed them that he was acting under the orders of the Abp. of Bologna, but consented to stay procedure till 'next evening.' Next evening the papal carbineers entered the house 'tore the child out of his father's arms,' and carried him to Rome, where he was immured in a convent. The bereaved father immediately followed, obtained several interviews with Cardinal Antonelli, and offered to prove that the servant who said she had baptized Edgar had turned out to be a worthless prostitute, living in sin with Austrian officers. The Cardinal declined to interfere, on the ground that the case did not come under his jurisdiction; later, the parents prevailed on him to allow several interviews, in which Edgar earnestly entreated his father and mother to take him home—a hopeless request. The case soon became known throughout Europe, and excited great indignation, particularly in England. The Evangelical Alliance drew up a protest, which was signed by the Abp. of Canterbury and more than 20 other bishops, by a large number of peers, members of parliament, heads of colleges, and ministers of the gospel, by more than 100 mayors and provosts, and by many other influential laymen. It was presented to Lord John Russell. The British Jews presented another. Nothing, however, was effected by these efforts. Edgar M. remained—latterly of his own choice, as the result seems to prove—in the hands of the Rom. Cath. Church authorities. He was educated for the priesthood, became an Augustine monk of the monastery Notre-Dame de Beauchêne, and preached his first sermon 1874. The narrative was necessarily an *ex parte* statement; no authorized exposition of the facts, on the part of the Roman authorities, having ever been made public.

MORTER, n. *mŏr'tĕr* [F. *mortier*, a lamp burned over a corpse—from *mort*, death]: in *OE.*, a lamp or light; a chamber-lamp.

MORTGAGE, n. *mŏr'gāj* [OF. *mortgage*—from F. *mort;* and *gage*, a token or pledge: L. *mortŭŭs*, dead—*lit.*, a dead pledge]: the grant of lands or houses to a creditor in security for the repayment of his money; state of being pledged: V. to convey or make over, as property to a creditor in security for a debt; to pledge; to put to pledge. MORT'GAGING, imp. *-ĭng*. MORTGAGED, pp. *mŏr'-gājd:* ADJ. conveyed or granted, as real property in security for a debt. MORTGAGER, n. *mŏr'gā-jĕr*, the person who grants lands or houses in security for debt. MORT'GAGEE', n. *-gā-jē'*, the person to whom an estate is mortgaged: see MORTIFY 2, and MORTMAIN. *Note.*—*Primarily*, MORTGAGE contains the condition that in case of non-payment at a certain time the estate becomes *dead*—that is, passes wholly into the hands of the creditor.—*Mortgage* in law is the temporary pledging of land in security of a debt: and as the land cannot be delivered into the creditor's hand, he acquires a hold over it by a deed called an indenture, or deed of M. The ordinary form of a M. deed resembles an absolute conveyance, but it contains a proviso that if the money borrowed is repaid within a certain time, then the mortgagee shall reconvey the land to the mortgagor or borrower. There is a mode of executing a M. without any deed, which in England is common with bankers and others who lend money. this consists in the borrower taking the title-deeds of his land to the banker, who keeps the deeds and lends money on the faith of them. This is called an equitable M. by deposit of title-deeds, but in fact is as good as any other M. In Scotland there is no such practice. See BOND, in Law. Mortgages in England are not a first-class security: hence trustees who are not specially authorized by their deed or will to invest in M. security do it at their risk, it being assumed that the only investment absolutely safe is government stock. In Scotland, mortgages are generally called bonds and dispositions in security, and form a higher and better security than in England, owing to a regular system of registration of deeds affecting land: hence trustees are entitled to invest their funds there in M. security, which is considered as safe as government stock, and less liable to fluctuations of interest.

In the United States a marked change has taken place in the rules defining the powers of a M. and the incidents relating to it, many of the provisions of the common law having been replaced by decisions in equity. Thus, it was formerly, and in some states still is, held that a M. is a conveyance with title in the mortgagee, that the title descends to the mortgagee's heirs on his death, and that it can be assigned only by an instrument similar to a conveyance. Against this view it is held in some states that the M. is a mere attendant upon the debt, that the assignment of the debt carries the M. with it as an incident, and that both debt and M. on the mortgagee's death belong to his personal representatives and not to his heirs (J. W. Dwight). A similar divergence

is found in decisions on other points, as well as in their observance in the various states. All kinds of property capable of actual sale may be mortgaged, but an expectancy cannot be; hence an heir cannot mortgage his possible future possessions. Whatever will render a general contract invalid will do the same to a M. The mortgagor is held to be the owner, and both he and every one deriving an interest from him subsequent to the M. possess the right of redemption, and may pay the debt and interest and be relieved of the M., either at the end of a time specified in the M., or at the convenience and will of the mortgagor or some person deriving an interest from him. But the creditor, in default of payment of interest, or for his protection otherwise, is entitled to close the transaction with the mortgagor or his legal representative by absolutely 'foreclosing' the M. and taking the property, or by selling the property and taking from the proceeds the amount of the debt with accumulations and expenses, leaving the remainder to his debtor. In the case of a mortgagor's death, the source from which the M. may be redeemed is governed by different rules. It is the practice in some places for redemption to be made from the personal estate, as that was the one directly benefited by the transaction, and as the personal property passes to the executors or administrators, the latter are held primarily liable for payment, and the heirs are made their sureties. On the other hand, it is elsewhere held that payment must be made from the real estate, and as this by common law passes directly to the heirs, they are primarily responsible, and the executors become their sureties. Unless redeemed, a M. attaches to the property on sale, and it is bought either subject to the M., in which case the purchaser is not personally chargeable, or with the assumption of payment of the M., when the purchaser becomes personally responsible for the full amount of the M., even should the property on which it lies diminish in value below the amount. The mortgagee of a M. on personal furniture and household effects, or on machinery, material, stock on hand, or commercial goods, may protect himself by bringing a bill in equity to obtain a decree of foreclosure, and a sale, or, if he has possession of the thing mortgaged, by selling it after notifying the mortgagor of the amount of debt due and of the time of sale. To prevent resort to chattel mortgages for the purpose of defrauding creditors by placing property beyond their reach, it is provided in most states that such mortgages, like those on real property, shall be filed in some public office, and various penalties are imposed for non-compliance; but it is doubtful if any rules fully cover the intention of the law in this respect.

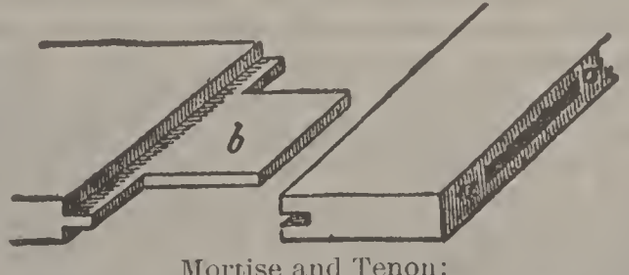
MORTIFEROUS, a. *mŏr-tĭf'ĕr-ŭs* [L. *mortifer*, death-bringing—from *mors*, death; *fero*, I bear]: bringing or producing death; deadly; fatal.

MORTIFY, v. *mŏr'tĭ-fī* [F. *mortifier*—from mid. L. *mortificārĕ*, to mortify—from L. *mors*, death; *facĭō*, I make; *fīō*, I am made]: to destroy vital qualities; to subdue or bring into subjection, as the appetites or passions; to subdue the body to the mind, as by abstinence or severities; to humble or depress; to vex; to lose vitality, as flesh; to become corrupt. MOR'TIFYING, imp.: ADJ. that tends to humble or abase; humiliating; vexing; becoming mortified. MOR'TIFIED, pp. *-fīd:* ADJ. humbled; vexed; subdued; affected with gangrene. MOR'TIFIER, n. *-fī-ĕr*, one who. MOR'TIFICA'TION, n. *-fĭ-kā'shŭn* [F.—L.]. humiliation; vexation; depression by disappointment; the subduing of the passions; subjection of the passions; the death of a part of a living body (see INFLAMMATION). MOR'TIFYINGLY, ad. *-lĭ.*—SYN. of 'mortification': chagrin; shame; trouble.

MORTIFY, v. *mŏr'tĭ-fī* [see MORTIFY 1]: in *Scots law*, to bequeath by will lands or money for certain specific purposes, religious or charitable, to trustees, or to a religious society, which bequests are then said *to be made dead*—that is, they cannot be alienated or transferred as property held in private hands. MOR'TIFYING, imp. MOR'TIFIED, pp. a. *-fīd*, left by will to a corporation for charitable purposes. MOR'TIFIER, n. *-fī-ĕr*, one who thus bequeaths property. MOR'TIFICA'TION, n. *-kā'shŭn*, the lands, houses, or money thus bequeathed: see MORTMAIN, which is the English equivalent for the Scotch MORTIFICATION. MASTER OF MORTIFICATIONS, a Scotch burgh functionary who has the charge of all charitable bequests under the corporation.

MORTIS CAUSA DEED, *mawr'tĭs kaw'za*, in Scotch Law: deed made with a view to taking effect on the death of the maker. Since in Scotland land cannot be conveyed by will, as in England, it is necessary to execute an ordinary deed of conveyance, and to reserve the maker's liferent, and to keep it in his own possession until his death—i.e., to suspend its effect during the life of the granter.

MORTISE, n. *mŏr'tĭs* [F. *mortaise*, a mortise: comp. L. *morsus*, a biting, a catching fast: also comp. Ar. *murtazz*, fixed in the mark. said of an arrow]: the hole



Mortise and Tenon:
a, mortise; *b*, tenon.

cut in one piece of wood to receive the *tenon* [from Fr. *tenir*, to hold] or projection by which another piece is made to hold it: V. to cut or make a mortise in. MOR'TISING, imp. MOR'TISED, pp. *-tĭst:* ADJ. joined by a

mortise and tenon. MORTISE AND TENON, form of joint in carpentry. The tenon is a projection, generally rectangular in form, on the end of a piece of wood, cut so as to fit exactly into a deep groove (called the mortise) cut in another piece, so that the two are united at a required angle. The framing of doors, shutters, and such pieces of joinery, is usually fitted together with mortise and tenon joints.

MORTLING: see MORLING.

MORTMAIN, n. *mŏrt'mān* [F. *mort*, dead; *main*, hand —from L. *mors*, death; *manus*, the hand]: *originally*, the transfer or conveyance of land to an ecclesiastical body, being, as it were, a *hand* which could never part with it again; in *law*, possession of lands or tenements in *dead hands*, or such as cannot alienate, as of a corporation or fraternity. STATUTES OF MORTMAIN, statutes in England, whose object is to prevent priests and others from importuning a dying man to convey his land for charitable purposes. Hence, though a person can, till the last hour of his life, if possessing sufficient knowledge of what he does, devise by will all his land to individuals absolutely, it is otherwise if he intend to give the land to trustees for a charitable purpose, e.g., to build a church or school or hospital. The statute of mortmain, 9 Geo. II. c. 36 (1736)—reciting that public mischief had greatly increased by many large and improvident dispositions made by languishing and dying persons to charitable uses, to take place after their deaths to the disinherison of their lawful heirs—enacted, that in future no lands or sums of money to be laid out in land should be given to any person or body, unless such gift or conveyance should be made or executed in presence of two witnesses 12 months before the death of the donor or granter, and be enrolled in the court of chancery within six months after the execution. Therefore, a person on death-bed cannot in England give land, or money to buy land, for a charitable purpose; and the property given at least 12 months before the death of the giver must be completely alienated, so that he has no further control over it. The deed must have a present operation, and must not reserve any life-interest to the donor; it must be done at once and forever. The policy of this statute has sometimes been questioned, and several well-known modes of evading the statute have been adopted from time to time. The act has been held to apply only to land locally situated in England; and hence, if the land is in Scotland, or the colonies, or abroad, a will conveying it for charitable purposes will receive effect. In Scotland, the mortmain act had no application: see DEATH-BED: INTESTACY.

In the United States, statutes of mortmain have been enacted in only a very few states and to a very limited extent.

MORTON, *mawr'ton*, HENRY, PH.D.: b. New York, 1836, Dec. 11. He graduated from the Univ. of Penn. 1857, and took an advanced course in chemistry. After filling various minor positions he became, 1869, prof. of chemistry in the Univ. of Penn. The following year he accepted the presidency of the Stevens Institute of Technology, Hoboken, N. J. He was one of the founders of the Dental College in Philadelphia, and was prominently connected with the Franklin Institute of that city. For several years he was a member of the light-house board. He made the lithographic drawings of the inscription on the Rosetta Stone. He attracted wide attention as a lecturer on light, and wrote many valuable scientific papers. He died 1902, May 9.

MOR'TON (JAMES DOUGLAS), fourth Earl of, Regent of Scotland: 1530–1581, June 2; b. Dalkeith; second son of Sir George Douglas of Pittendriech. In 1553 he succeeded, in right of his wife, Elizabeth, daughter of the third earl, to the title and estates of the earldom. He early favored the Reformation, and 1557 was one of the original Lords of the Congregation. Sworn a privy councilor 1561, he was appointed lord high chancellor of Scotland 1563. Having been one of the chief conspirators against Rizzio, the Italian sec. of Queen Mary, on his assassination, 1566, he fled with his associates to England, but, through the interest of the Earl of Bothwell, soon obtained his pardon from the queen. Though privy to the design for the murder of Darnley, on the marriage of the queen to Bothwell, he joined the confederacy of the nobles against her. He was present at Carberry Hill when Bothwell parted from the queen, and after Mary's imprisonment in the Castle of Lochleven he was restored to the office of high chancellor, of which he had been deprived, and constituted lord high admiral of Scotland. On the death of the Earl of Mar, 1572, he was elected regent of the kingdom. His rapacity and avarice made him obnoxious to many of the nobles, and as the young king, James VI., desired to assume the reins of government, Morton resigned the regency 1578. Subsequently obtaining possession of the castle of Stirling, with the person of the king, he recovered his authority, but was accused of participating in the murder of Darnley, and, being tried and condemned, was beheaded at Edinburgh.

MOR'TON, JAMES ST. CLAIR: 1829, Sep. 24—1864, June 17; b. Philadelphia. He graduated from West Point 1851, and after various promotions became, 1855, assistant-prof. in that institution. In 1860, he led the expedition sent by congress to explore for a railroad route in Central America. He was afterward engineer of the Washington aqueduct, had charge 1861 of the fortification of Tortugas, and was promoted captain. The following year he was chief engineer first to the Army of the Ohio, and then to the Army of the Cumberland; 1862, Nov., he was promoted brig.gen. vols. He intrenched Murfreesborough, Tenn., served in several battles, was wounded

at Chickamauga, and brevetted col. for gallantry in that action. In the Richmond campaign, 1864, he was with the 9th army corps as chief engineer, and was killed while leading his troops at the attack on Petersburg, Va. He had published several works relating to engineering and fortification. After his death he was brevetted brig.-gen. in the U. S. army.

MOR'TON, JOHN: 1724–1777, Apr.; b. Ridley, Penn. He was appointed justice of the peace 1764, was in the state assembly several years, and was speaker of that body 1772–75. He was a member of the Stamp Act Congress 1765, was successively sheriff of the county, presiding judge of the court of common pleas, and judge of the supreme court of the province. He was in the Continental Congress 1774–76, and earnestly advocated the adoption of the Declaration of Independence. On his death-bed he referred to his signing of that instrument as 'the most glorious service that I ever rendered my country.' He died at Ridley, Pennsylvania.

MOR'TON, LEVI PARSONS, LL.D.: b. Shoreham, Vt., 1824, May 16. He was employed in a country store, went to Boston, and 1850 became member of the firm of Beebe, Morgan & Co. In 1854 he founded in New York the firm of M. & Grinnell; and 1863, in the same city, established the banking-house of M., Bliss & Co., and a similar house in London under name of M., Rose & Co. These firms have sometimes acted as financial agents of the U. S. govt. M. was elected member of cong 1878, and re-elected 1880. He declined 1880 the republican nomination for vice-pres., was minister to France 1881–85, received for the people of the United States the Bartholdi statue, and was elected vice-pres. of the United States 1888. In 1894, Sep. 18, he was nominated for gov. of N. Y., at Saratoga Springs, and was elected by a plurality of 156,108 votes.

MOR'TON, NATHANIEL: 1613–1685, June 16; b. Leyden, Holland. When he was 10 years old his parents brought him to the Plymouth colony, where his father soon afterward died, and he became a member of the family of his uncle, Gov. Bradford. He soon became of great assistance in the management of public business, was elected sec. of the colony 1647, and annually re-elected until his death, 38 years later. In accordance with the wishes of the commissioners of the united colonies he compiled the first history of the settlements. This was published 1669, with the title, *New England's Memoriall, or a Brief Relation of the most Memorable and Remarkable Passages of the Providence of God manifested to the Planters of New England;* and its accuracy was fully attested by eminent men of the colony. Several later editions have appeared. He wrote occasional poems and a *Synopsis of the Church History of Plymouth.* He died at Plymouth, Mass.

MOR'TON, Oliver Perry· 1823, Aug. 4—1877, Nov. 1; b. Saulsbury, Ind. When 15 years of age he was apprenticed to his brother, who taught him the trade of hatter, but after working four years he left the shop and obtained an education. After studying two years at Miami Univ., he became a student in a law office at Centreville, Ind., and 1847 commenced practice in that town. He rose rapidly in his profession, was elected judge 1852, and on the expiration of his term a year later he went to a law school in Cincinnati, where he remained a year. The attitude of the democrats toward slavery caused him to leave that party. He joined the movement which resulted in the formation of the republican party, and was its first candidate for gov. of Ind. During the canvass he showed great ability, but was defeated at the polls, and resumed his legal practice. He was elected 1860 lieut.gov. of the state, and on the election of Gov. Lane to the U. S. senate he became gov. 1861, Jan. 16. He vigorously opposed the secession movement, and made preparation for the conflict which he believed to be at hand. During the civil war he was one of the most energetic and efficient supporters of the Union cause in the country. A secret society was arranged 1864 for his assassination and for a general uprising, but he promptly arrested the leaders and averted the threatened disasters. He was elected gov. 1864 by a large majority, resigned 1867 to become U. S. senator, and was re-elected to the senate 1873. He declined the office of minister to England. In 1865, he was stricken with paralysis, and was never able to walk again, but he remained one of the most brilliant orators and leaders of the republican party till his death. He died at Indianapolis.

MOR'TON, Samuel George, M.D.: American physician and ethnologist: 1799, Jan. 26—1851, May 15; b. Philadelphia; son of an Irish emigrant. He studied medicine in Philadelphia, Edinburgh, and Paris, and 1824 settled in Philadelphia. He contributed papers on physiology and craniology to scientific journals. His endeavor was to find a scientific basis for the doctrine of the original diversity of mankind. In 1839, he was appointed prof. of anatomy in the Pennsylvania Medical College, and published his great work, *Crania Americana*, based on his collection of 867 classified skulls. In 1844, he published *Crania Ægyptiaca*, based on the collection of George R. Gliddon; and 1849, his last work, *An Illustrated System of Human Anatomy, Special, General, and Microscopic.* He died at Philadelphia. See the Memoir of M. prefixed to Nott and Gliddon's *Types of Mankind* (Philadelphia 1854).

MOR'TON, Thomas: 1575 (or about 1590)—1646; b. England. He was a London lawyer who came 1622 at the head of Weston's colony to settle in Massachusetts. He soon returned to England, but came back 1625 with Capt. Wollaston (another adventurer), and a party of emigrants. He founded Mount Wollaston, now Brain-

tree, Mass. His conduct and his avowed principles were in defiance of the Puritan seriousness, and made him obnoxious to the colonists. He was arrested, sent to England, and the name of his settlement was changed to Dagon. He returned, was again sent back, but for the fourth time came to Mass. He was imprisoned a year for publishing *The New England Canaan*, a description of the country and a satire on Puritan customs. He died at Agamenicus, Maine.

MOR'TON, William Thomas Green: 1819, Aug.—1868, July 15; b. Charlton, Mass. He tried business life in Boston, but, not succeeding, went to Baltimore 1840, where he studied dentistry. He returned to Boston 1841, attended medical lectures, studied chemistry under Dr. Charles T. Jackson, and introduced a new material for fastening false teeth to gold plates. He experimented with various agents to produce insensibility to pain during the extraction of teeth, and 1846, Sep. 30, succeeded, by the use of sulphuric ether, in rendering a patient unconscious while a bicuspid tooth was drawn. Other successful experiments were made, and on Oct. 16 of the same year ether was publicly administered in a surgical operation at the Mass. general hospital. It soon came into extensive use as an anæsthetic. M. obtained a patent for the preparation under the name of *Letheon;* but secured little pecuniary benefit therefrom. His claim as discoverer of an anæsthetic agent in surgery was contested by Dr. Jackson, Horace Wells, and others; his business in Boston was ruined, and he repeatedly sought relief from congress in vain. The French Academy of Sciences awarded him a prize of 2,500 francs, he received decorations from Russia and Sweden, and numerous testimonials from the medical profession in this country. He died in New York. A monument in his honor was erected 1868 in the Boston Public Garden.

MORTUARY, n. *mŏr'tū-ă-rĭ* [L. *mortuārĭŭs*, belonging to the dead—from *mor'tŭ-s*, a dead person]: a gift, claimed by, and due to, the minister in very many parishes, on the death of a parishioner; a gift left by a man at his death to his parish church; a burial-place: Adj. pertaining to the burial of the dead. Mortuary urn, a vessel to contain the ashes of the dead.

MORUS, n. *mō'rŭs* [L. *morus:* It. *moro*]: the mulberry-tree, the black mulberry is *Morus nīgra*, and the white mulberry *Morus alba*, ord. *Morācĕæ*.

MOSÆSAURUS, n. *mōs'ē-saw'rŭs*, or Mos'asau'rus [L. *Mosa*, the river Meuse, on which *Mæstricht* is situated; Gr. *saurus*, a lizard]: in *geol.*, a gigantic marine reptile of the Upper Chalk, allied to the crocodile—so called from its first being found in the Mæstricht beds.

MOSAIC, a. *mō-zā'ĭk*, or Mosa'ical, a. *-ĭ-kăl:* pertaining to *Moses* or his writings. Mosa'ically, ad. *-lĭ*.

MOSAIC, n. *mō-zā'ĭk*, or MOSAIC-WORK [mid. L. *musivum*, *musārĭcŭm*, or *mosārĭcum opus*, mosaic-work: F. *mosaïque*, mosaic—origin not known, but supposed to be from Gr. *mouseion*, a place dedicated to study and the muses, a museum]: designs formed with small pieces of colored glass, stones, or pebbles, cemented on a ground of stucco or inlaid upon metal; the art of so designing. MOSAIC, a., or MOSA'ICAL, a. *-zā'ĭ-kăl* relating to or composed of mosaic-work. MOSA'ICALLY, ad. *-lĭ*. MOSAIC-GOLD, a fine gold-colored variety of brass; an alloy of copper, zinc, and gold: see TIN.—*Mosaic* is the art of producing artistic designs by setting small square pieces of stone or glass of different colors, so as to give the effect of painting. The origin of the art is obscure; but it was much practiced by the Romans, especially for ornamental pavements, specimens of which are almost always found whenever the remains of an old Roman villa are discovered. Under the Byzantine empire, it was much used for the ornamentation of churches, in which it formed much of the wall-decoration, It was re-introduced into Italy for the latter purpose about the middle of the 13th c. by Andrea Tafi, who learned it of some Greek artists employed at Venice in decorating St. Mark's. Since then it has been especially an Italian art, and to such wonderful perfection has it been brought that most minute pictures are produced by it. Within quite recent years, mosaics of surpassing beauty in design and material have been produced by Russian artists in the Imperial Glass Manufactory of Russia; those shown in the Russian dept. of the International Exhibition (1862) have probably never been surpassed. The pieces of glass of every shade of color are technically called *smalts*; they are generally opaque, and are set in cement in the same manner as tiles or pavement. In Italy there are two very distinct varieties of mosaic work—the Florentine and the Roman: the Florentine is formed entirely of pieces of stone or shell of the natural colors, and is limited in its application chiefly to floral and arabesque designs: the Roman is made of the glass smalts mentioned above, and has so wide an application that most of the finest paintings of the best old masters have been copied in mosaic, and the pictures so taken form the almost imperishable decorations of the finest churches of Italy. The manufacture of the opaque glass or smalts for making the little square pieces called tesseræ, of which the pictures are composed, is a very important one, and is carried on in the Vatican, where 25,000 shades of the various kinds of colored glass are produced.

MOSASAURUS, n. *mŏs'ă-săw'rŭs:* see MOSÆSAURUS.

MOSAYLIMA (Little Moslem): one of the most important rivals of Mohammed, advancing his claim about 630. He belonged to the clan Dûl, a division of the tribe of the Bani Hanifah, of Yamâma in Nedjed. The traditions about him are contradictory and legendary. He seems to have risen to a certain eminence in his tribe, probably at first as a religious teacher only, before Mohammed assumed his prophetical office. He was known among his friends by the name Rahmân, the Benignant or Merciful; a term which Mohammed adopted as a designation of God himself. This word, which is Aramaic, was a common divine epithet among the Jews, from whom Mohammed took it, together with a vast bulk of dogmas, ceremonies, and legends. It was in the 9th year of the Hedjrah that M., at the head of an embassy sent by his tribe, appeared before Mohammed, to settle certain points of dispute. Shortly after this event, M. openly professed himself a prophet, as well as Mohammed. The latter sent a messenger to him, as soon as he heard of this, to request him to reiterate publicly his profession of Islam. M.'s answer was a request that Mohammed should share his power with him. 'From Mosaylima, the Apostle of God,' he wrote, according to Abufeda, 'to Mohammed, the Apostle of God. Now let the earth be half mine, and half thine.' Mohammed speedily replied: 'From Mohammed, the Apostle of God, to Mosaylima, the liar. The earth is God's: He giveth the same for inheritance unto such of his servants as He pleases, and the happy issue shall attend those who fear Him.' Yet notwithstanding these testimonies, of probably late dates, it seems perfectly certain that Mohammed made very great concessions to his rival—concessions that point to his having secretly nominated M. his successor, and that he by this means bought M.'s open allegiance during his life-time. It was not a question of dogmas, though they each had special revelations, but a question of supremacy, which was thus settled amicably.

When Mohammed was at the point of death, he desired to write his will. Whatever he may have wished to ordain, is uncertain; it is well known, at all events, that his friends did not obey his order, and refused to furnish him with writing-materials, very probably because they did not like to be bound by his last injunctions. Sprenger supposes that he wished formally to appoint M. his successor, and that it was rthis which his surrounding elations feared. M. then openly declared against Islam, and many parodies of the Koran sprang up in the Nedjed, ascribed to him. In the 11th year of the Hedjrah, it at last came to an open breach between the two rival powers. Abu Bekr, the caliph, sent Khalid, 'the Sword of the Faith,' with a number of choice troops, to compel M. to submission. M. awaited the enemy at Rowdah, a village in the Wadi Hanifah. So formidable indeed was M.'s force, that Khalid is said to have hesitated for a

whole day and night before he undertook an assault unanimously disapproved of by his council. On the second morning, however, he advanced, and in a battle which lasted until the evening, gained the victory, with fearful losses. M. fell by the hands of a negro slave, and his head was cut off by the conqueror, and placed at the head of a spear, to convince both friends and foes of his death. Khalid then advanced to the slain prophet's birthplace, to slay all its inhabitants. They, however, by a clever stratagem concluded an honorable peace, but had to embrace Islam. The Mosleymian 'heresy' was thus stamped out, and only a few scattered remnants of the new faith contrived to escape to Hasa and Basrah, where they may have laid the foundation of the later Karmathian creed.

It is extremely difficult to come to any clear notion of M.'s real doctrines, as all the accounts of them come from victorious adversaries, who have not hesitated to invent most scandalous lies about his character, though the truth seems to be that M. was of much higher moral standing than Mohammed himself. Mr. Palgrave considers that his religion had a socialist tendency, rejected fatalism, contained an idea of incarnation, and invested its preachers and teachers with a semi-mediatorial character; but these are mere conjectures.

MOSBY, *mōz'bĭ*, JOHN SINGLETON: b. 1833, Dec. 6, Va. He was a lawyer, but at the opening of the civil war entered the Confederate cavalry. In 1862 he was invited by Gen. Stuart to act as a scout, and he soon organized a band of rangers and commenced the 'guerilla' warfare which made him the dread of the Northern forces. Though several times wounded, he always eluded his pursuers. After the war he practiced law in Warrenton, Va. He advocated the election of the republican candidates for pres., 1872 and 1876, and was U. S. consul at Hong Kong six years, after which he practiced law at San Francisco. He lectured on *Stuart's Cavalry*, at Boston in 1886, Dec., the lecture being later published as *War Reminiscences* (1887). He also wrote *The Dawn of the Real South* (1901).

MOSCHATEL, n. *mŏs'kă-tĕl'* [Gr. *moschos*, a tender shoot: L. *muscus*, moss or musk]: a small British plant having pale-green flowers, and whose leaves and flowers smell like musk; the *Adoxa moschatelli'na*, ord. *Cap'rifoliācĕæ*.

MOSCHUS, n. *mŏs'kŭs* [Gr. *moschos;* L. *muscus,* musk]: a genus of animals; the musk-deer; musk used as a remedial agent. MOSCHIDÆ, or MOSCHINÆ, family of ruminant quadrupeds (see MUSK, or MUSK-DEER).

MOSCOW, *mŏs'kō:* important government of central Russia, immediately s. of the governments of Tver and Vladimir; 12,552 sq.m. The surface is level, with the exception of a tract in the s.w., which is elevated. It is watered by the Moskva and the Kliazma, while the Oka forms a portion of its southern boundary. The soil, principally clayey, with some sandy and stony tracts, is, on the whole, unfertile, and barely supplies local consumption. Few of the governments of Russia, however, equal that of Moscow in manufactures and general industry. It contains numerous cloth, silk, brocade, chintz, paper, and other factories. China-ware is manufactured from the clay in the district of Gjelsk. Many of its villages carry on special branches of manufacture, e.g., of pins, glass beads, and small looking-glasses for Asia. White limestone is quarried, and is much used for building in the capital; yellow marble is quarried on the banks of the Oka. Peat is extensively used as fuel in the factories. Among the places historically celebrated are the monastery of St. Sergius, founded by one of the first Muscovite princes, and famous for its silver shrine, said to be the richest in the world; and the village of Borodino (q.v.). Pop. of government, 2,433,356.

MOS'COW (Russ. *Moskwá*): city, ancient capital of Russia, former residence of the czars; in a highly-cultivated and fertile district on the Moskva, 400 m. s.e. of St. Petersburg, with which it is in direct communication by railway; lat. 55° 40′ n., long. 37° 33′ e. Previously to its being burned 1812, Moscow was perhaps the most irregularly built city in Europe, and that distinction to a great extent it still retains; for, as the main object in 1813 was to build speedily, the streets rose again on the old model, undulating and crooked, and consisting of alternating houses, the most varied in character and pretensions. Many improvements have, however, been made recently. Wide streets have been laid out, and stately buildings erected; gas-pipes have been laid along the streets; letter-boxes are placed at frequent intervals; the Romanzoff Place, formerly so dirty, has been converted into a splendid square, with an ornamental garden, and the old obelisk, the former monument of the Place, standing in the centre, with water fountains on each side. The general view of the town, especially that obtained from an eminence on its southern side called the Sparrow Hills, is eminently original and picturesque. Its hundreds of churches and convents, surmounted by gilt or variously-colored domes; its gardens and boulevards; and, above all, the high walls and crowded yet stately towers of the Kremlin or citadel, produce a most striking effect. It is indeed said to be the most remarkable

architectural scene in the world. The Kremlin, on the northern bank of the river, forms the centre of the town, and around it, with a radius of about a mile, is a line of boulevards, extending, however, only on the northern side of the river. Outside of this line, and concentric with it, is another line of boulevards, with a radius of a mile and a half; while beyond all, and forming the girdle of the city, is the outer rampart, with a circumference of 26 English m. The Kremlin comprises the principal buildings, as the Cathedral of the Assumption of the Virgin, founded 1326, a small but gorgeously-decorated edifice; the Cathedral of the Archangel Michael, containing the tombs of all the czars down to the time of Peter the Great, who changed the royal burial-place to St. Petersburg; the Church of the Annunciation, the floor of which is paved with jaspers, agates, and carnelians of various shapes; the tower of Ivan Veliki, 200 ft. in height, surmounted by a magnificent gilded dome, from which, as from all the domes of Moscow, rises the 'honorable cross'; the Czar Kolokol (king of bells), greatest bell in the world; several palaces, and collections of ancient arms and other antiquities; the arsenal, surrounded by the splendid trophy of 850 cannons, taken from the French; and the senate. The walls of the Kremlin are surmounted by 18 towers, and pierced with 5 gates. In the town, the chief buildings are the cathedral of St. Vassili, remarkable for peculiar architecture; the Gostinoi Dvor, or Bazaar; and the Exchanges. The Temple of the Savior, commenced 1812, to immortalize the repulse of the French invasion, was finished 1881. It is resplendent with gold and marble; the gilding of the fine cupolas alone cost 100,000 silver roubles. The University of Moscow, the first in Russia, founded 1753, is attended by 1,800 students, and contains a library of 160,000 volumes, museums of natural history, and a botanical garden. As intermediate educational establishments between the parish schools and the university, there are 5 high schools or gymnasia for males, and 3 for females; special establishments are the technological, the agricultural, the oriental, 2 commercial, and 3 military schools. There are several learned societies in Moscow, which is also the seat of a metropolitan, one of the three highest dignitaries of the Russian Church. The public museum and library, removed from St. Petersburg 1861, occupies a large and handsome building, formerly a palace, is rich, especially in ancient Slavonic MSS., and has about 250,000 volumes.

Moscow communicates by railway with St. Petersburg, Nijni-Novgorod, Koslov, etc. It is the seat of an extensive manufacturing and commercial industry; it imports largely, and has considerable export trade, especially with Asia. Its trade is chiefly in hides, leather, oils, wool, grease, isinglass, wax, honey, feathers and down, potass, soap, iron and copper; cotton from Asia, silks from

Georgia, Persia, and Bokhara; Caucasian madder, home and Turkish tobacco, furs, tea, chemicals, and all the products of Russian manufacture, of which Moscow is the actual centre. The chief manufactures are woolen and worsted goods, silks, brocades, dyeing, printing, tanning, and skin-dressing, iron, copper, and silver works, and chandleries.

History.—Moscow is said to have been founded in 1147 by George Dolgoruki, prince of Kiev. Its nucleus was the Kremlin, which at first was nearly surrounded by a palisade, and formed an important military station. For a long time it continued to be a dependency of the principality of Vladimir; and in 1238, when Batou-Khan devastated Russia, it was sacked and burned. In 1293 it was again sacked, and the inhabitants were dragged away into slavery by Khan Nagai. Ivan Danilovitch of Vladimir took the title of grand prince of Moscow in the early part of the 14th c., and from that time it remained the seat of government until the beginning of the 18th, when the administration was transferred by Peter the Great to St. Petersburg. Moscow was plundered by the Lithuanians and the Tartars of Tamerlane in the latter part of the 14th c., and was nearly consumed by fire in 1536, in 1547, and again in 1571, when the Tartars set fire to the suburbs, a large part of the population perishing on that occasion. During the insurrections caused by the pseudo-Demetrius (1605-12), when the Poles and Cossacks took the city, it was again partly destroyed. In 1812 it was entered by the French under Murat on Sep. 14, and on the 15th by Napoleon, who took up his residence in the Terem palace in the Kremlin. The city, deserted by its inhabitants, was set on fire by order of the governor, Count Rostoptschin, compelling Napoleon to leave on Oct. 19, and to take his final departure on the 23d, and resulting in the disastrous retreat of the French army. The greater part of the city was then destroyed, notwithstanding the efforts of the French to stay the progress of the flames. It was rebuilt within a few years. The railway to St. Petersburg was opened in 1851. The chief of modern events are the coronations in 1856 of Alexander II., and in 1896 of Nicholas II., at the latter ceremony 2,000 people being crushed to death, and hundreds injured, during the distribution of gifts. Pop. (1891) 822,397; (1897) 977,269, with suburbs 1,035,664, nearly all Great Russians of the Orthodox Greek Church.

MOSEILIMA. See Mosaylima.

MOSELEY, *mōz'lĭ*, Edward Augustus: American lawyer: b. Newburyport, Mass., 1846, Mar. 23. He went to sea when a boy, and was engaged for several years in both the East and West Indian trade. He then studied law, was admitted to the Massachusetts bar, practiced as a lawyer, and was also a member of the state legis-

lature for several terms. His chief interest has been the lessening of danger in railroad travel; he has become the leading authority in the United States on all measures or appliances for procuring the safety of railroad employees and travelers, and largely for this reason was appointed secretary of the Interstate Commerce Commission at the time of its formation. On account of his constant efforts in obtaining and enforcing the safety-appliance law he has received numerous testimonials from all the railroad men's organizations in the United States, and the formal thanks of the commonwealth of Massachusetts 'for distinguished services in the cause of humanity.' He has written *Arbitration as Applied to Railways and Their Employees; Safety Appliances on Railroads; One Hundred Years of Interstate Commerce Law* (1900); *The Transportation Question as Affected by the Cullom Bill* (1900).

MOSELY COMMISSIONS: two delegations known as the INDUSTRIAL and the EDUCATIONAL, which visited the United States in 1902 and 1903, to study conditions and methods in their respective branches, for comparison with those of Great Britain.

The Mosely Industrial Commission made a tour of the United States from 1902, Nov., to 1903, Jan., to investigate manufacturing, industrial and commercial lines, which in international competition had seriously affected the commerce and free trade policy of Great Britain. It originated with and was financed by Mr. Alfred Mosely (b. Bristol, England, 1855), a wealthy retired diamond merchant whose relations with American mining and other engineers in South Africa had developed the philanthropic desire to discover the sources of their success, the comparative causes of Great Britain's industrial decline, and to evolve a plan whereby American methods could be introduced into the United Kingdom for the permanent rehabilitation of its economic and industrial status. A suggestion to invite British trades-unions to select a representative from each to form a commission to study American industries and the condition of the workmen was acted upon. Mr. Mosely justly expecting that these secretaries would be in a better position than anyone else to impart the results of their visit, and the conclusions they arrived at, to their various unions. Most of the unions accepted the invitation, electing as representatives in nearly every case their general secretary. Twenty-three in all formed the commission and were given a free trip to the States, with expenses paid for nearly three months. Each man was pledged to study conditions carefully.

Mr. Mosely and the delegates made a circular tour in which they were afforded every opportunity to inspect some of the largest manufactories in the United States. They visited Niagara, Buffalo, Cleveland, Chicago, Dayton, Pittsburg, Philadelphia, and New York, as one

party, while individual members also took trips to other points. The delegates took copious notes, and the chief results of their observations were published 1903, Apr., in the *Reports of the Mosely Industrial Commission.*

Some of the conclusions arrived at were: The American workman for two and one-half days' work receives remuneration equal to that of the British for a week; the American is more temperate than the British; he lives longer; is more thrifty, and after a few years frequently retires with his savings to an easier occupation, usually farming or market-gardening. Labor saving machines were more in evidence in America than in the United Kingdom, but, there was a considerable difference of opinion among the various delegates as to what could be learned from America in their respective trades, for instance, the shipbuilding and bricklaying in England were considered superior to those of America. To the question 'Are there greater opportunities for the workingman to rise in America than in England?' 'Yes,' came as a unanimous answer. The average workman was considered as good in one country as the other; the difference was to be found in conditions. In Great Britain generations of workers toil in a confined area, and have become hidebound by inherited labor traditions; increased production to them does not mean increased wages—hence a lack of incentive. In the United States, the stimulating climate and abundance of undeveloped resources tend to a constant striving for direct results through the simplest means, whence the wonderful development of machinery, manufacturing equipment, output, increased wages, general prosperity, and well-being of the American workmen, together with a unity of feeling between employers and employees along the lines of increased production, which is not to be found in England. The organization of capital and labor in the United States produced a great impression on the delegates, and the advantages of the Civic Federation to bring together these two great and active factors in production on all disputed questions, and at the initial stages to avert strikes by arbitration, were fully recognized as those of a model organization worthy of immediate adoption. The freedom accorded to religious belief and the excellent public school education of the States, elicited the warmest praise from the commission, the advantage given to all the American youth being fully apparent.

The success of the Industrial Commission led to the organization of the *Mosely Educational Commission* to the United States, 1903, Oct.-Dec., in which 26 prominent British educators took part at the invitation of Mr. Mosely to investigate:

1. The development of individuality in the primary schools.

2. The social and intellectual effects of the wide distribution of secondary education.

3. The effect of specific instruction given (a) in business methods; (b) in applied science.

4. The present state of opinion as to the value of professional and technical instruction of university rank, designed with special reference to the tasks of business life.

As in the work of the Industrial Commission the conclusive deductions drawn were wholly in favor of the system of education in the United States, which was described as practical, enlarged, enlightened, up-to-date and scientific. Consult: Mosely, *Reports of the Mosely Educational Commission to the United States of America, October-November 1903* (London 1904).

MOSELLE, *mō-zĕl'* [Ger. *Mosel*]: a European river which rises in France on the s.e. of Remiremont, in the department of the Vosges, across which it flows n.w., through the department of Meurthe-et-Moselle. Thence it proceeds n.e. through German Lorraine into Rhenish Prussia. After passing Trèves in a remarkably winding course, it falls into the Rhine at Coblenz; total course, about 360 m., of which 220, commencing at the junction of the Meurthe, are navigable. Its principal affluents are, in France, on the right bank, the Valogne, Meurthe, which joins it below Nancy, and Seille, which it receives at Metz; on the left bank, the Madon, Math, Orne; and beyond France, on the right bank, the Sarre, which joins it above Trèves; and on the left bank, the Sure, Kill, and Elz. Of these affluents the Meurthe, Sure, and Sarre are navigable.

MOSES, *mō'zĕz* (Heb. *Môsheh;* LXX. and Vulg. *Moyses;* ? Egypt. *Mes* or *Messou;* Copt. *Mo-ushe*, i.e., drawn out of the water): prophet, liberator, and lawgiver of the Israelites: about B.C. 1397—1277 (the chronology is confused, and these dates seem most probable from recent investigations: other conjectural dates range between the above and B.C. 1728—1608; Usher's having had most acceptance, 1571—1451); b. Egypt (? Tanis or Zoan), during the period of Israel's hard bondage; son of Amram and Jochebed, both of the tribe of Levi. The tale of his birth and early education has, by tradition (Manetho, Philo, Josephus, the Midrash, etc.), received an extraordinary and legendary character far other than that found in Exodus i., ii., etc., though the few great features are on the whole the same in all; and there is no reason to doubt the truthfulness of this account. The Biblical narrative, to which late traditions (in Philo, Josephus, the Fathers, etc.) have supplied questionable names and dates, is that Moses' mother, unable to hide the child—which by royal edict was to have been drowned at birth—longer than for the space of three months, put it into a basket of papyrus, and hid it among the Nile rushes, while Miriam, his sister, watched it from afar. The king's daughter (Thermuthis,

or Merris?), coming down to bathe in the river, observed the weeping child, and was so struck with its beauty, that she allowed Miriam to fetch a Hebrew nurse, and Miriam brought her mother, Jochebed. Grown up, Moses was sent to the Pharaoh's palace as the adopted son of the princess, and here seems to have had not only princely rank, but also a princely education. It is supposed that the king or Pharaoh was Rameses II., and that his palace was then at Tanis. Moses is said, in the traditions, also to have become a priest, under the name of Osarsiph or Tisithen, and to have been a mighty adept in all the sciences of 'Egypt, Assyria, and Chaldea'; to have led Egyptian armies against the Ethiopians, defeated them, and pursued them to their stronghold, Saba (Meroe); this place being delivered into his hands by Tharbis, the king's daughter, whom he subsequently married. These traditions are of no authority. The Bible contains nothing whatever about his youth and early manhood, beyond the few points above noted as Biblical, except that 'he was instructed in all the wisdom of the Egyptians, and was mighty in his words and works' (Acts vii. 22); and that 'by faith, when he was grown up, he refused to be called the son of Pharaoh's daughter' (Heb. xi. 24-26). He reappears in Exodus first as the avenger of a Hebrew slave, cruelly treated by an Egyptian overseer. Threatened by one of his own people who knew of his bloody act, he escapes into Midian, in the southeastern part of the peninsula of Sinai, where he is hospitably received by Jethro, the priest, and married his daughter, Zipporah. He stayed many years in Midian, tending the flocks of his father-in-law. This sudden transition from the life of an Egyptian court, in which he had been brought up a prince, to the state of a poor, exiled shepherd, together with the influences of the vast desert around him, must have produced a singular revolution. The fate of his brethren went now to his heart with greater force. The ancient traditions of his people, and the promises of Jehovah to his forefathers; that they should become a mighty nation, and possess the ancient heritage of Canaan, rose before his mind. The God of Abraham, announcing himself by the name of Jehovah (I am that I am), appeared to him while his mind was occupied with such thoughts, and commissioned him as the liberator and leader of his people. A new king had succeeded in Egypt, his old enemies were either dead or had forgotten him, and Moses returned to Egypt. Together with Aaron, his brother, the man of small energy but of fine tongue, he consulted about the first steps to be taken with the king as well as with their own people:—both of whom treated them at first with suspicion or contempt. The new Pharaoh was probably Menephthah I., son of the Pharaoh of the oppression, Rameses the Great.

After ten distinct plagues (more or less akin to nat-

STATUE OF MOSES BY MICHELANGELO.

ural phenomena peculiar to Egypt), the last being the death of all the firstborn, Pharaoh consented to let his slaves go free, 'that they might serve their God.' Moses himself led of God, led Israel forth across the Red Sea, through a way prepared by terrible Divine power. Moses was at this time probably about 80 years of age. Calmness, disinterestedness, patience, perseverance, meekness, coupled with keen energy, rapidity of action, unfailing courage—'wisdom in council and boldness in war'—gave Moses his control over the vast horde of hundreds of thousands half-brutalized and half-heathen slaves who knew no law in their newly-acquired liberty, and who were quick to murmur and to rebel on any or no provocation. Beside the hostile Bedouin tribes whose territories the new emigrants approached, the jealousy of certain elders fostering seditions within, added to his burdens and dangers; and his own brother Aaron, whom he had made his representative during his temporary absence on the Mount of Sinai, assisted in the fabrication of an idol. Moses assumed his sacred office as legislator in the third month after the Exodus, when, after many hard and trying marches and counter-marches—from Goshen to Succoth; thence, by a *detour*, to Etham, Pihachiroth, through the Red Sea, to the Desert of Shur, Marah, Elim (Wadi Gharandel),) Desert of Sin (Wadi Mocatteb, or Wadi Al-Sheikh), Dophka, Alus, Raphidim (near the Makkad Sidna Mousa)—made more trying by want of food and of water, by encounters with the Amalekites, having arrived near the Mount of Sinai, he made the people encamp all round, and ascended alone the summit of the mountain. The tendency of the holy Law then revealed in majesty from God through Moses, and of the later law of doctrine, duty, and ceremonial observances, was to make the Hebrews a people 'consecrated to Jehovah,' 'a holy people, and a kingdom of priests,' i.e., a people of equals both before God and before the Law. The Decalogue forms the moral core of the Mosaic Constitution—declaring the existence of Jehovah as the absolute and only God; proclaiming the liberation of the people; and prohibiting Polytheism, and the Representation of the Divinity by visible images (commandments I.-III.); while the institution of the Sabbath, the symbol of creation and the Creator, forms the basis of all religious observances (commandment IV.); and the remaining commandments (V.-X.) relate to the intercourse among the members of the human commonwealth; inculcating the honoring of parents; prohibiting murder, adultery, theft, false witness, coveting of others' goods. The groundwork of these regulations had indeed been a special inheritance in the family of the Abrahamites from the earliest times; but the vicissitudes of fortune, the various migrations, and the enormous increase of this family, and its mingling for generations with the surrounding idolators, had obliterated

nearly all traces of the creed and worship in the populace. The wisdom evinced even in the minor regulations of the Mosaic dispensation, in their adaptation to the peculiarity of the race, the climate, the political state of the country which they were to inhabit; in the hygienic regulations, and the rules for social and domestic relations; and, above all, the reiterated warning against mingling again with other nations, such as they found them in Canaan—the neglect of which warning subsequently brought national ruin—is traced to a direct influence of Jehovah, generally indicated by the words, 'Jehovah said unto Moses: * * * speak unto the children of Israel.' An ample Ritual, in connection with the Tabernacle, or constantly-visible symbol of a Divine Dwelling; the allegory of an ever-new covenant represented by Sacrifices, Prayers, Purifications, kept their supreme task of being priests and a holy people unceasingly before the eyes of the nation. The tribe of Levi (q.v.), to a certain degree acted in this respect as permanent representatives; and not to Moses' sons, but to his brother Aaron and his descendants, was intrusted the office of High-priest.

On the eve of entering into the promised land, the people broke out in open rebellion, and threatened, by a spontaneous return to the land of slavery, to undo the entire work of Moses' life. Convinced that they were not as yet fit to form a permanent commonwealth, the Liberator and Lawgiver had to postpone, for the long space of 40 years, the crowning act of his work; and, in fact, died on the border of the land of promise shortly before their entrance upon it. How these years of nomadic journeying through the Desert (El-Tyh or Al-Tyh Beni-Israel) were spent, save in rearing up a new generation of a more manly and brave, as well as more 'civilized' stamp, we can only conjecture. All those who had left Egypt as men were doomed to die in the desert, either by a natural death, or by being suddenly 'cut off,' in consequence of their openly defying Moses, and, through Moses, Jehovah. The apparent lack of incidents during the period has furnished grounds for various speculations, some of which have sought to reduce it to a much shorter space. The testimonies of the Hebrew prophets and historians, however, are perfectly unanimous on the subject (Jos. v. 6; xiv. 10; Amos, ii. 10; v. 26; Ps. xcv. 10, etc.), and modern criticism has mostly sustained the ancient record. On the first month of the 40th year after the Exodus, we find Moses at the head of an entirely new generation of Hebrews at Kadesh, in the Desert of Phoran or Zin. Here his sister Miriam died. Here also, for the first time, Moses, seeing the new generation as stubborn and 'hard-necked' as their fathers, is recorded to have despaired of the Divine Providence; and his disobedience to the letter of the command given to him, 'to speak to the rock,' and his

smiting it instead, is alleged as the reason 'that his bones too had to fall in the desert.' His brother Aaron died at Hor (near Petra, according to Josephus and St. Jerome), whither the Israelites had gone next. Not long afterward, Moses once more had occasion to severely punish the idolatrous tendencies of the people (Baal Peor), thus showing that age had not relaxed his strong rule over the still half-savage and sensuous multitude. Having finally fixed the limits of the land to be conquered, and given the most explicit orders to Joshua, to Eliezer, and the chiefs of the ten tribes, respecting its division, he prepared the people for his own impending death. He recalled to their minds their miraculous liberation from Egypt and no less miraculous preservation in the desert. Their happiness—their life—was bound up, he told them, in their loving and cleaving to Jehovah, and obeying His law communicated through Moses. A recapitulation of its principal ordinances, with their several modifications and additions, and reiterated exhortations to godliness, form the contents of his last speeches, which close with one of the grandest of hymns. The law was then handed over to the priests that he might instruct the people in it thenceforth; Joshua was installed as successor (while Moses' own sons passed into the obscurity of ordinary Levites); and he blessed the whole people. He then ascended the Mount of Nebo, whence he cast a first and last look upon the land toward which he had yearned for half a century, and on which his feet were never to tread. He died upon this mountain, 120 years old, but still in fulness of natural strength, according to the Scriptures, 'and no man knew his burial-place to this day'—so that neither his remains nor his tomb were desecrated by 'Divine honors' being superstitiously paid to them.

The non-biblical traditions as to the life of Moses bear plain evidence of being growths and distortions of the narrative in the Pentateuch; though probably somewhat more of value may attach to the traditions of Manetho. On Moses' office as a 'prophet'—what was the special nature of his revelations, how far the doctrines promulgated by him were traditional among the Abrahamites, and how much of his laws is due to Egyptian influences; whether part of them was first inaugurated by later generations and ascribed to him, or whether others were never carried out at all—on these and similar questions which have been abundantly raised, especially in recent times, see the special works on the subject. For some of the more important points, see GENESIS; EXODUS; JEWS; PENTATEUCH; DECALOGUE; etc. Beer, *Das Leben Moses* (1863), gives the Jewish legendary view.

MOSES, BERNARD, PH.D.: American historian and political economist: b. Burlington, Conn., 1846, Aug. 27. After graduating from the University of Michigan in

1870, he went to Europe for further study, receiving his Ph.D. from Heidelberg in 1873. In 1875, he became professor of history at Albion College, and since 1876 has been professor of history and political economy at the University of California. His more important works are: *Politics* (with W. W. Crane); *Federal Government in Switzerland; Democracy and Social Growth in America; Establishment of Spanish Rule in America; The Government of the United States* (1906). He was a member of the United States Philippine Commission 1900-2.

MOSES, Franklin J.: American jurist: b. Charleston, S. C., 1804, Aug. 13; d. Columbia, S. C., 1877, Mar. 6. He was graduated from the South Carolina College in 1823, studied law and began the practice of law at Sumter. In 1841, he was elected to the state senate and re-elected for 30 years. In 1866, he was elected circuit judge and after the reconstruction period chief justice of the supreme court of the state, re-elected in 1872.

MOSHEIM, *mōs'hīm,* Johann Lorenz von: distinguished church historian of Germany: about 1694—1755, Sep. 9; b. Lübeck. He studied at Kiel. In 1723 he became ordinary professor of theology at Helmstedt, whence he was removed 1747 to a similar office in Göttingen. He died chancellor of the University of Göttingen. His theological works are numerous, among which are a work on Bible morality, *Sittenlehre der Heiligen Schrift* (new ed., continued by J. P. Miller, 9 vols. Helmst. 1770-8), and Discourses, *Heiligen Reden* (3 vols. Hamb. 1732, et seq.). But his most important contributions to theological literature are in ecclesiastical history, in which his *Institutiones Historiæ Ecclesiasticæ* (Helmst. 1755) is familiar as a work of great learning, fulness, and accuracy. It has been translated from the original elegant Latin into English and other languages. The best English translation is that by Dr. James Murdock (3 vols. New York 1832), of which there are many reprints. Besides this, Mosheim is author of *Institutiones Historiæ Christianæ Majores* (Helmst. 1763); *De Rebus Christianorum ante Constantinum Commentarii* (Helmst. 1753); *Dissertationes ad Hist. Ecclesiasticam pertinentes* (2 vols. new ed. Altona 1767); and *Versuch einer unparteiischen Ketzergeschichte* (2 vols. Helmst. 1746-8). His position is that of liberal orthodoxy; yet he is essentially a historian or critic of doctrine, and deals more with the tenets of men than with the character and genius shining through them.

MOSKWA, *mŏsk'vâ,* Rus. *mosk-vâ':* river of European Russia; branch of the Oka, which is itself a branch of the Volga. It is famous for the great battle, called the battle of Borodino (q.v.), on its banks, 1812, Sep. 7, from which Ney (q.v.) obtained his title Prince of Moskwa. The Moskwa rises in the govt. of Smolensk, passes

close by the towns of Moshaisk and Svenigorod, passes through the city of Moscow, and joins the Oka near Kolomna, in the govt. of Moscow; total length about 290 m. Considerable commerce is carried on by boats on the M., and it is directly connected with the Volga by the *M. Canal.*

MOSLEM, n. *mŏz'lĕm* [Ar. *muslim*, a true believer: an orthodox Mohammedan; a Mussulman, which is a mere corruption of *muslim:* see MUSSULMAN: MOHAMMEDANISM.

MOSOSAURUS, *mŏs-ō-saw'rŭs* (MEUSE LIZARD): genus of huge marine lizards, whose remains occur in rocks of cretaceous age. Three species are known—one from the upper chalk of Sussex, a second from the cretaceous beds of N. America, a third from the Maestricht beds. This last (*M. Hofmanii*) was known first from a nearly perfect head dug out of St. Peter's Mount 1780, and

Head of Mososaurus.

popularly called the great animal of Maestricht. Originally the property of Hofman, it was taken from him, in virtue of some clause in their charter, by the ecclesiastical authorities of Maestricht, who, in their turn, were compelled to give it up to the victorious French army, and by them it was removed to Paris. It is said that the French cannoneers, preparing for the siege, had instructions not to point the artillery toward that part of the town in which the precious specimen was deposited. This head is four ft. in length, and the animal to which it belonged is estimated to have been 25 ft. long. The total number of the vertebræ was 133; they were concave in front and convex behind, and were fitted to each other by a ball-and-socket joint, admitting of easy and universal flexion; the sacrum seems to have been lacking. The limbs were developed into four large paddles, and these, with the comparatively short and strong tail, the bones of which were constructed to give great muscular power, enabled the animal to move quickly through the water in pursuit of prey. The jaws were furnished with a single row of strong conical teeth. Cuvier first showed the affinities of the animal. It is related most nearly to the modern monitor, but differs from all modern lizards in its peculiar adaptations for an ocean life and in its great size. The largest living lacertian is

only 5 ft. in length, and of this a large proportion is made up by the tail; the M., with its short tail, is estimated to have been at least 25 ft. long.

MOSQUE, n. *mŏsk* [F. *mosquée*—from Sp. *mezquita*, a mosque—from Ar. *masjid*, place of prayer]: Mohammedan house of prayer. The form of the oldest mosques (at Jerusalem and Cairo) is evidently derived from that of the Christian Basilica, the narthex being the origin of

Great Mosque at Delhi, from the Northeast.—From Fergusson's *Hand-book of Architecture.*

the court, with its arcade, and the eastern apses representing the principal buildings of the M. facing Mecca. The original forms became, however, entirely obliterated in the progress of Mohammedan architecture, and the mosques, with their arcaded courts, gateways, domes, and minarets, became the most characteristic edifices of Saracenic art. Wherever the Mohammedan faith prevailed, from Spain to India, beautiful examples of these buildings are found. They vary considerably in style in different countries, the Saracens generally borrowing much from the architecture of the various nations who adopted their faith. In India, the mosques have many features in common with the temples of the Jains, while in Turkey they resemble the Byzantine architecture of Constantinople. Everywhere the dome is one of the chief and most beautiful features of the mosques, which usually consist of porticoes surrounding an open square, in the centre of which is a tank or fountain for ablution. Arabesques and sentences of the Koran inscribed on th walls, which are generally whitewashed and never bear any device representing a living thing, are the only ornaments of the interior. The floor is generally covered with mats or carpets: there are no seats. In the s.e. is a kind of pulpit (Mimbar) for the Imám; and in the direction in which Mecca lies (the Kibleh), there is a niche (Mehrab) toward which the faithful are required to look when they pray. Opposite the pulpit, there is generally a platform (Dikkeh), surrounded by a parapet, with a desk bearing the Koran, from which portions are read to the congregation. The

five daily prayers (see MOHAMMEDANISM), which are generally said at home—especially by the better classes—on week-days, are said in the mosque by the whole congregation on Fridays, the days of Al-Gumah, or the Assembly, the Moslem Sundays, together with some additional prayers, and at times a sermon is added to the service. It is not customary for women to visit the mosques, and if they do, they are separated from the men. The utmost solemnity and decorum are preserved during the service, though in the hours of the afternoon (when there is no worship) people are seen lounging, chatting, even engaged in their trade, in the interior of the building. On entering the mosque the Moslem takes off his shoes, carries them in his left hand, sole to sole, and putting his right foot first over the threshold, he then performs the necessary ablutions, and finishes by putting his shoes and any weapons that he may have with him upon the matting before him. The congregation generally arrange themselves in rows parallel to that side of the mosque in which is the niche, and facing that side. The chief officer of a mosque is the Nazir or warden, under whom are two Imáms, a kind of religious official, in no way resembling a Christian clergyman, but who performs a certain number of religious rites, as long as the Nazir allows him to do so, and who, being very poorly remunerated, generally has to find some other occupation besides. There are many persons attached to a mosque in a lower capacity, as Mueddins (q.v.), Bowwabs (door-keepers), etc., all of whom are paid, not by contributions levied upon the people, but from the funds of the mosque itself. The revenues of mosques are derived from lands. With many of the larger mosques, there are schools, academies (Medressehs), and hospitals connected, and public kitchens, in which food is prepared for the poor.

MOSQUITO, n. *mŏs-kē'tō* [Sp. *mosquito*—from *mosca;* L. *Musca,* a fly; Fr. *moustique*]: a gnat-like fly. The name is generally given in tropical countries to the most troublesome species of Culex and allied genera (see ANOPHELES and STEGOMYIA). According to Humboldt in tropical parts of S. America the name is given to species of *Simulia,* which are active during the day, while species of *Culex,* active chiefly during the night, are called *Zancudoes;* but these latter are the mosquitoes of other countries generally. The name was probably first used by the Spanish conquistadores in the West Indies and the Central American continent, where it particularly denotes a species, *C. mosquito,* now called *Stegomyia.* Similar species extend even to far northern regions, appearing during the heat of summer in prodigious swarms; other species are found in nearly all parts of the world and are almost as great a pest in Lapland, at times, as in the tropics. They constitute a very large family of dipterous insects (Theobald describes nearly 500 species), having the wings laid flat on the back when at rest, the antennæ

thread-like, feathery in the male and hairy in the female, mouth furnished with long proboscis, adapted in the females only for piercing the skin of animals and sucking their blood, which is necessary for the maturation of their eggs. The males feed only on vegetable juices, as the structure of their proboscis does not enable them to penetrate into the skin. An irritating fluid secreted in the salivary glands is injected into the wound, hence the swelling and pain after the bite. The proboscis is composed of seven parts, of which, however, the most apparent one only acts as a sheath to the other six, which to the naked eye appear as fine bristle-like structures. Persons new to regions where mosquitoes abound are much more subject to the assaults than the natives, which in a measure become immune to the irritating sensation of the bites. The flight of mosquitoes, like that of other gnats, is swift and the buzzing sound during flight is extremely annoying and makes sleep practically impossible unless the beds are provided with mosquito-curtains, which are drawn at night to protect the occupant. In some parts of the United States these insects are troublesome during six or seven months of the summer and autumn and the screening of windows and doors has become common. This and other protections against these pests are now much more imperative owing to the fact that within the last ten years quite a large number of species have been proven the carriers and transmitters of diseases. Ross, Grassi, Bignami, Celli, Koch and others demonstrated as early as 1897 that malaria was contracted and disseminated through the sting of certain species of mosquitoes of the genus *Anopheles* (see ANOPHELES). In 1901, the U. S. Army Commission in Havana and in 1902 the U. S. Marine Hospital Commission in Veracruz, Mexico, demonstrated beyond doubt that yellow fever was also transmitted by a single species of mosquito, *Stegomyia calopus* (see STEGOMYIA). In 1903, Graham, of Beyrut, Syria, found that Dengue fever was due to a parasite carried by *Culex fatigans*. *Panoplites pseudotitillans* conveys the larvæ of *Filaria sanguinis hominis*, a nematode worm, from one person to another.

There is no doubt that other species besides those just mentioned carry disease germs as well, even if the latter affect animals instead of man, and, in fact, the transmission of malaria in man was primarily suggested by Manson's discovery in India that bird-malaria was due to mosquito bites. On account of their agency in disease transmission as well as the annoyance these insects cause, a general warfare of extermination is now being carried on and, of course, the main efforts to that effect must be directed upon their breeding places and progeny. The eggs of mosquitoes are deposited on the surface of shallow, stagnant water. Some species deposit them, agglutinated side by side, in the shape of rafts, others place

them singly and scattered. They hatch usually within three or four days into wormlike larvæ which are destitute of feet but beset along their sides with bundles of stiff, bristle-like hairs and furnished on their hindmost body-segment with four paddle-shaped flaps. They swim and dive by means of wriggling motions and are, therefore, popularly called 'wiggle-tails'; they feed chiefly on decaying vegetable substances, although one or two species are claimed to devour the larvæ of other smaller and weaker species. They are often seen to suspend themselves at the surface of the water, head downward, for the purpose of respiration by means of radiating bristles, exposing at the same time the orifices of a long respiratory siphon situated on the ninth body-segment; through these orifices air is admitted to the tracheal tubes which ramify throughout the body. The larvæ change into pupæ in from eight to fifteen days; they also inhabit the water and are active but do not feed, and remain almost constantly at the surface of the water, only diving and swimming with jerky motions of their abdominal segments when they are disturbed. The thorax of the pupa is very large and the trumpet-shaped respiratory siphons are now located on its anterior portion. In from two to five days the pupal skin bursts open along the middle line of the thorax and the complete insect or mosquito gradually climbs out of its prison, using it as a raft while its wings are drying and hardening.

MOSQUI'TO COAST, or MOSQUI'TO TERRITORY, or MOSQUITIA, *mŏs-kē'shĭ-a:* formerly a native kingdom on the e. coast of Central America, under the protectorate of Britain; bounded n. by Honduras, w. by Nicaragua, and s. by Costa Rica; area estimated 15,000 sq.m., but, as 20,000 m. of territory are contested between it and Honduras and Nicaragua, its extent may be approximately given at 25,000 sq.m. The coast is low, with many bays and lagunes and a number of good harbors. The two principal rivers are the Rio de Segovia (which rises within 35 m. of the Pacific Ocean) and the Rio Escondido, both flowing into the Caribbean Sea. The climate is rainy, and the temperature, considering the latitude, is cool and equal, the thermometer seldom rising above 82° or falling below 71°. On the whole, this territory is one of the most healthful parts of Central America: ague is not unusually common, epidemics are rare, and white people who do not recklessly expose themselves have good health. The swampy grounds are generally covered with dense forests, in which dye-woods and timber-trees of great value abound. Rice, maize, manioc, and other tropical plants are cultivated. The country abounds in deer of various kinds, half-wild horses and oxen roam in the savannahs, which are covered with tall grass, and alligators and serpents are common. The chief exports are mahogany, cocoa, ginger, sarsaparilla, and tortoise-shell, but the whole trade is inconsiderable. The inhabitants

are of various races, the greater portion aboriginal, but many are a cross between the native Indians and runaway negroes. Their chief occupations are hunting and fishing, though there is a little agriculture and cattle-breeding. Pop. not more than 10,000 to 15,000.

The Mosquito Coast was discovered 1502 by Columbus, and was claimed by Spain till about 1660, when the king, with consent of his people, placed himself under the protection of Britain. British colonists at different times attempted to found settlements in various parts of the country, but from various causes were soon compelled to withdraw. Of late years they have had more success. The foothold which Britain thus obtained in Central America was viewed with disapproval by the United States. In 1850, July, the United States and Great Britain bound themselves by the Clayton-Bulwer treaty 'not to occupy, fortify, colonize, or exercise dominion over the Mosquito Coast, or any part of Central America'; and 1859, Nov., Britain ceded the protectorate of Mosquito Coast, with the Bay Islands, to Honduras, causing much discontent among the natives of the coast, and a complete rebellion of the islanders. However, by a subsequent treaty, 1860, Jan. 26, the whole territory was finally transferred to Nicaragua (q.v.).

MOSS, n. *mŏs* [F. *mousse;* It. *musco;* L. *muscus;* Dut. *mos,* mold: Ger. *moos,* moss: Icel. *mosi,* a swampy or mossy place]: a family of plants with simple branching stems and numerous narrow leaves, found growing on rocks, trees, among grass, etc.; the ord. *Musci* or *Bryācĕæ* (see MOSSES); a word popularly applied to many low-tufted plants; a bog; a morass: V. to cover with moss. MOSS'ING, imp. MOSSED, pp. *mŏst:* ADJ. overgrown with moss. MOSSY, a. *mŏs'ĭ,* overgrown with or abounding in moss. MOSSINESS, n. *mŏs'ĭ-nĕs,* the state of being overgrown with moss. MOSS-AGATE, a variety of agate which, on being cut and polished, exhibits numerous minute tree-like branchings of various shades, like the filaments of moss (see MOCHA-STONE). MOSS-BERRY, cranberry, which see; the *Oxycoc'cus palus'tris,* ord. *Vaccinĭācĕæ.* MOSS-CAPPED, MOSS-CLAD, or MOSS-GROWN, covered with moss. MOSS-LAND, land abounding in peat-moss. MOSS-ROSE, a beautiful variety of the rose, having a moss-like growth on the envelope of the flower; a garden variety of *Rosa centĭfōlĭă,* ord. *Rosācĕæ.* MOSS-TROOPERS, a name given to the mounted robbers or banditti, in the 17th c., who, to the number of several thousand, infested the border moor-lands or mosses between England and Scotland before the union of the two crowns.

MOSS'-BUNKER, or BONY-FISH. See MENHADEN.

MOSSES (*Musci*): one of the two classes (*Hepaticæ* and *Musci*) of cryptogamous plants constituting the subkingdom of the *Bryophyta* or mossworts. On account of

the similarities in the female reproductive organs the Bryophytes and Pteridophytes are sometimes classed together as the *Archegoniatæ*.

A typical moss plant consists of two generations: the gametophytic generation, which is sexual, and the sporophytic generation, which is always asexual. The spores which are produced by the asexual plants always give rise to the sexual plants. When a moss spore germinates it generally grows into a filamentous, confervoid structure called the *protonema*. The protonema produces the leafy moss plants or gametophores, which originate from lateral buds. One or more leafy plants may originate from a single protonema, which may be evanescent or persistent. The typical gametophore consists of a simple or

Fig. 1.

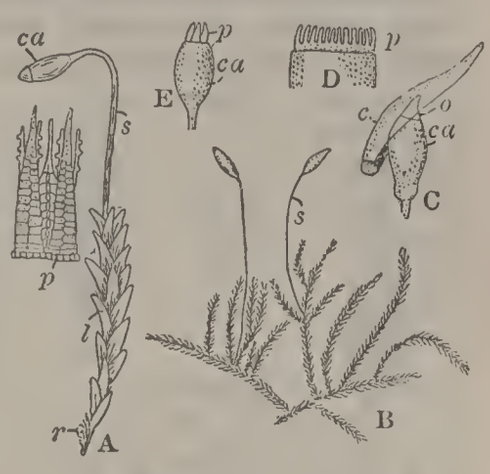


Fig. 2.

Fig. 1. Diagram illustrating the alternation of generations in mosses: *a*, spore; *b*, germinating spore; *c*, protonema; *d*, simple leafy plant or gametophore; *e*, antheridium and archegonium; *f*, spermatozoid and egg-cell; *g*, unicellular embryo produced by the fusion of the spermatozoid and egg-cell; *h*, first division of the unicellular embryo; *i*, embryonic sporogonium; *j*, mature sporogonium bearing a calyptra; *k*, capsule with operculum detached; *l*, section of capsule showing spores.

Fig. 2. *A*, a typical acrocarpous moss; *l*, leaves; *r*, rhizoids of the gametophore; *s*, seta. *ca*, capsule of the sporogonium; *p*, portion of peristome showing outer and inner teeth. *B*, a typical pleurocarpous moss (Brachythecium). *C*, capsule showing calyptra, *c*. *D*, mouth of capsule of Catharinea. *E*, capsule of Tetradontium. *ca*, capsule; *o*, operculum; *p*, peristome.

branched central *axis* or *stem*, which is clothed with green foliage *leaves*. Branched linear aggregates of cells, the *rhizoids*, originate from the lower portion of the stem and function, the same as the root-hairs of higher plants. The sexual organs are borne in either terminal or lateral bud-like clusters surrounded by modified leaves, the *perichætial leaves*. The same bud may contain both male and female organs (synoicous), or they may be separated and then on the same (monoicous) or distinct (dioicous) plants. The female organ, called the *archegonium*, consists of a flask-like basal portion, the *venter*, which contains the *egg-cell*, and a long *neck* which is open at

maturity. The male organ, or *antheridium*, is a sac-like structure borne on a short pedicel. At maturity it produces a large number of motile male-cells or spermatozoids. The egg-cell of the archegonium is fertilized by one of the spermatozoids, and develops without any period of rest into the sporogonium of the sporophytic generation.

The typical sporogonium consists of a long, slender stalk, the *seta*, which bears a cylindrical or urn-shaped *capsule*. The capsule is generally terminated by a detachable lid or *operculum*. The sporogonium is green when young, but yellow, brown, or purplish when mature. The capsule and lid are covered during development and early maturity by a loose hood, the *calyptra*, which originates by the enlargement of the archegonium. When the capsule is mature, both lid and hood become detached, thus permitting the escape of the *spores*, which

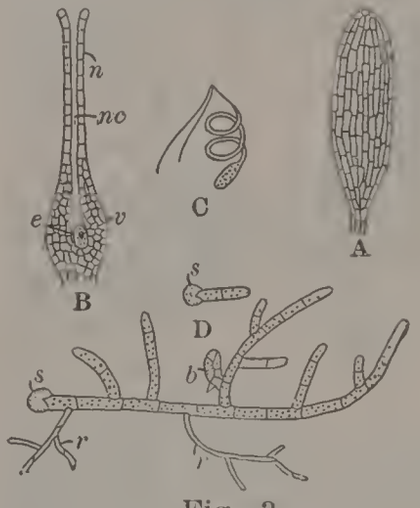


Fig. 3.

Fig. 4.

Fig. 3. *A*, an antheridium. *B*, an archegonium; *v*, venter; *n*, neck; *nc*, neck-canal; *e*, egg-cell. *C*, a single spermatozoid. *D*, a protonema which has originated from the germination of a spore; *s*, spore; *r*, rhizoids; *b*, bud which will grow into a leafy plant or gametophore.

Fig. 4. *A*, a typical Sphagnum: *ca*, capsule; *c*, remnant of an imperfect calyptra; *o*, operculum; *p*, pseudopodium. *B*, Andreæa petrophila, natural size and a single branch enlarged. *C*, Archidium phascoides, natural size and enlarged.

are located in a single *spore-sac*, surrounding the central axis or *columella* of the capsule. The mouth of the capsule is often surrounded by a single or double row of teeth, the *peristome*, the number of teeth or segments varying from 4 to 64. The number of teeth is always a multiple of four and is constant for a given species. The peristome is hygroscopic in most mosses, and is consequently closed in damp weather, either by twisting or incurving, so that the spores are protected from wetting. Stomata appear for the first time in the plant kingdom, and are located in the wall of the capsule. The sporogonium is not organically connected with the leafy plant,

but is attached by having the basal end of the seta sunk in the end of the stem.

The ease with which vegetative propagation is effected accounts in some measure for the abundance of mosses under favorable conditions. Nearly all parts of the gametophyte are capable of growing out into a protonema which will give rise to new plants, and the sporogonium possess this power to a limited extent. Many mosses produce brood-bodies either on the protonema or on the gametophores, and these give rise to new plants under favorable conditions. The class Musci may be divided into the following orders:

1. *Sphagnales,* the Sphagnum or peat mosses, consisting of the single family *Sphagnaceæ,* and one genus, *Sphagnum,* containing about 250 species, of which 50 may be found in North America. The order may be characterized as follows: Protonema filamentous or thalloid depending upon illumination; gametophore, with main axis naked but producing flagelliform lateral branches, tufted at the apex, color characteristic, leaves ecostate and consisting of two kinds of cells, hyaline and chlorophyll bearing, monoicous or sometimes dioicous; capsule globular with bulbous foot, with a false seta or pseudopodium from the growth of the gametophore, operculate, no peristome and no true calyptra.

2. *Andreæales,* the black mosses, consisting of a single family, the *Andreæaceæ,* and one genus, *Andreæa,* containing about 105 species, of which 15 may be found in North America. The order may be characterized as follows: Protonema, at first a linear aggregate, but later either a branched superficial aggregate a few cells wide or sometimes cylindrical; gametophore, irregularly branched and thickly clothed with leaves, always dark and sometimes black, leaves ecostate or costate and consisting of one kind of cells; monoicous or dioicous; capsule elongated with bulbous foot, pseudopodium produced as in Sphagnum, no operculum, but the dehiscence by 4 to 8 longitudinal slits with the valves generally coherent at the apex, calyptra present.

3. *Archidiales,* minute mosses, consisting of the single family *Archidiaceæ,* and one genus, *Archidium,* containing only 24 species, of which 11 are North American. The order may be characterized as follows: Protonema branched, filamentous, persistent and mostly subterranean; gametophore short, minute and little branched with rather scattered leaves; leaves costate, cells monomorphic; monoicous, or sometimes synoicous, rarely dioicous; capsule nearly globular, sessile with small bulbous foot, no operculum, no peristome, dehiscence of capsule irregular by rupture of wall, no calyptra proper.

4. *Bryales,* the true mosses, consisting of a large number of families containing upwards of 4,500 species, of which over one-fourth may be found in North America. The order may be characterized as follows: Protonema

generally conferoid, but sometimes producing flat expansions, persistent or ephemeral; gametophore simple or variously branched, leaves costate or ecostate, cells monomorphic except in Leucobryum; synoicous, monoicous, dioicous, or polyoicous; sporogonium with capsule and seta proper, and either acrocarpous or pleurocarpous; capsule variously formed, either symmetric or asymmetric; dehiscent by an operculum or cleistocarpous; peristome present or absent and either cellular or membranous, calyptra always well developed.

Some species of mosses are strictly aquatic, growing either submerged or floating, or in swampy places. The majority are either mesophytes or xerophytes in habit, growing upon the ground, trunks of trees, the bare face of rocks, roofs of houses, or even between bricks of sidewalks.

Mosses are of little importance in comparison with the other classes of the plant kingdom. They are not generally of a noxious character, but some species often grow luxuriantly in lawns or meadows in regions of considerable rainfall, to the detriment of the grass covering. In moist climates, the roofs of old houses sometimes become covered with mosses which serve for the collection of wind borne soil or other detritus, thus holding sufficient moisture to increase the work of wood-rotting fungi. Mosses on the bark of trees are simply epiphytic, never parasitic. They may be removed from locations where they are objectionable by the application of lime or spraying with copper sulphate or bluestone. Proper drainage will cause the hydrophytic forms to disappear. The Sphagnum mosses have contributed very largely to the formation of the extensive accumulations of peat (see PEAT) in times past and they form a characteristic feature of the so-called sphagnum or peat bogs. The peat mosses and some of the other species are also used for the packing of things liable to be broken. On account of their hygroscopic properties peat moss is used by florists and nurserymen in the greenhouse and in shipping material for propagation. Aquatic forms are occasionally grown in small aquaria. In the far north, where other vegetation is sparse, mosses and lichens may serve as forage for the reindeer and other herbivorous animals to some extent. In regions where they are abundant they are used for mulches and also for bedding of animals.

MOST, a. *mōst* [AS. *mæst;* Scot. *maist;* Goth. *maists;* Dut. *meest;* Icel. *mestr,* most (see MORE)]: superl. degree of *much;* consisting of the greatest number or quantity: N. the greatest number, part, or quantity; the utmost value or extent—when apparently used as a noun, the noun is really understood. MOST, ad., or MOST'LY, ad. *-lĭ,* in the greatest or highest degree; for the greatest part. AT MOST, or AT THE MOST, within the furthest limits; the utmost extent. TO MAKE THE MOST OF, to derive the greatest benefit or advantage from.

MOSTICK, n. *mŏs′tĭk* [contr. from Ger. *malerstock*]: the stick or staff on which a painter rests his hand when printing; also written *mahl-stick* and *maul-stick*: see the former.

MOSUL, *mō′sŭl* or *mô′sŭl:* town of Asiatic Turkey, province of Al-Jezireh (ancient Mesopotamia), on the right bank of the Tigris, opposite the ruins of ancient Nineveh (q.v.), 180 m. up the river from Bagdad. It is surrounded by walls, and is more flourishing than most Turkish towns, on account of its caravan-trade with Diarbekir, Bagdad, and Aleppo, though its prosperity is nothing to what it formerly was. During the middle ages it supplied all Europe with its rich manufactures—*muslins*, according to Marco Polo, got their name from this town; now, on the contrary, the bazaars of M. are filled with the manufactures of the West. The principal causes of its diminished importance are the rise of Abushehr (q.v.) as an emporium of trade, and the opening of the new sea-route to India, across the Isthmus of Suez. M. is the seat of a Jacobite patriarch, and was formerly the great metropolis of all the Mesopotamian Christians (the Nestorians, the United Chaldæans, the Jacobites, etc.); but war, pestilence, famine, Mohammedan proselytism, oppression, and incessant anarchy have greatly reduced their numbers. Pop. estimated 18,000 to 40,000, of whom about a fourth are Christians; 1,500 Jews; the rest Mohammedans (Arabs, Kurds, and Turks).

MOT, n. *mō* [F. *mot*, word, expression—from It. *motto* —from mid. L. *muttum*, a word]: a saying; a motto; a call sounded on the horn in hunting, at the death of the game: see MORT 1. BON MOT, *bŏng mō* [F. good word]: a witty saying; a jest.

MOT, or MOTE, v. *mōt* [AS. *mot*, must, ought]: in *OE. primarily*, must; ought; *later OE.*, may. SO MOTE IT BE, in *OE.*, so may it be; amen.

MOTACIL′LIDÆ: see WAGTAIL.

MOTAZILITES, *mō-tăz′ĭ-līts*, or MUTAZ′ALITES, *mū-*: 'heretical' Mohammedan sect, dating a few generations after Mohammed (see MOHAMMEDAN SECTS). Their name is derived from an Arabic word, denoting 'to separate one's self,' and originally applied to any special sect or union of men; but the M. becoming the most important and dangerous in Islam, they received this denomination by way of eminence. They were called also Moattalites —i.e., those who divest God of His attributes—and Kadarija—i.e., 'those who hold that man has a free will, and deny the strict doctrine of predestination.' The first beginnings of this sect are traced to Mabad, who, in the time of Mohammed himself, began to question predestination, by pointing out how kings carry on unjust wars, kill men, and steal their goods, and all the while pretend to be merely executing God's decrees. The real founder of the sect, as such, however, is Wasil b. Ata. He denied God's 'qualities,' such as knowledge, power, will,

life, as leading to, if not directly implying, polytheism. As to predestination itself, this he allowed to exist only with regard to the outward good or evil that befalls man, such as illness or recovery, death or life; but man's actions he held to be entirely in his own hands. God, he said, had given commandments to mankind, and it was not to be supposed that He had, at the same time, preordained that some should disobey these commandments, and that, further, they should be punished for it. Man alone is the agent in his good or evil actions, in his belief or unbelief, obedience or disobedience, and he is rewarded according to his deeds. These doctrines were further developed by his disciple, Abu-l-Hudail, who did not deny so absolutely God's 'qualities,' but modified their meaning in the manner of the Greek philosophers—viz., that every quality was also God's essence. The attributes are thus not without, but within, Him, and so far from being a multiplicity, they merely designate the various ways of the manifestations of the Godhead. God's will he declared to be a peculiar kind of knowledge, through which God did what He foresaw to be salutary in the end. Man's freedom of action is possible only in this world. In the next, all will be according to necessary laws immutably preordained. The righteous will enjoy everlasting bliss; and for the wicked, everlasting punishment will be decreed. Another doctrine of his system was the assumption that, before the Koran had been revealed, man had already come to the conclusion of right and wrong. By his inner intellect, he held, everybody must and does know—even without the aid of the divinely given commandments—whether the thing he is doing be right or wrong, just or unjust, true or false. He is further supposed to have held that, unless a man be killed by violent means, his life would neither be prolonged nor shortened by 'supernatural' agencies. His belief in the traditions was not absolute. There was no special security, he said, in a long, unbroken chain of witnesses, considering that one fallible man among them could corrupt the whole truth.

Many were the branches of these M. There were, apart from the disciples of Abu-l-Hudail, above mentioned, the Jobbaians, who adopted Abu Ali Al-Wahhab's (Al-Jobbâi's) opinion, to the effect that the knowledge ascribed to God was not an 'attribute;' nor was his knowing 'necessary;' nor did sin prove anything as to the belief or unbelief of him who committed it, who would in either case be subjected to eternal punishment if he died in it, etc.—Besides these, there were the disciples of Abu Hashem—the Hashemites, who held that an infidel was not the creation of God, who could not produce evil.—Another branch of the M. were the disciples of Ahmed Ibn Hayet, who held that Christ was the eternal Word *incarnate*, and assumed a real body; that there were two gods, or creators, one eternal, viz., the Most High God, and the other not eternal, viz., Christ—not unlike the Socinian and Arian theories on

the nature of Christ; that there is a successive transmigration of the soul from one body into another, and that the last body will enjoy the reward or suffer the punishments due to each soul; and that God will be seen at the resurrection with the eyes of understanding, not of the body.

Four more divisions of this sect are mentioned—viz., the Jâhedhians, whose master's notion about the Koran was, that it was 'a body that might grow into a man, and sometimes into a beast, or to have, as others put it, two faces—one human, the other that of an animal, according to the different interpretations.' He further taught them that the damned would become fire, and thus be attracted by hell; also, that the mere belief in God and the Prophet constituted a 'faithful.'—Of rather different tendencies was Al-Mozdar, the founder of the branch of the Mozdarians. He not only held the Koran to be uncreated and eternal, but, so far from denying God the power of doing evil, he declared it to be possible for God to be a liar and unjust.—Another branch was formed by the Pasharians, who, while they carried man's free agency rather to excess, yet held that God might doom even an infant to eternal punishment—all the while granting that He would be unjust in so doing.—Another branch of these Motazilite sectarians were the Thamamians, who held, after their master, Thamâma, that sinners would undergo eternal damnation and punishment; that free actions have no producing author; and that, at the resurrection, all infidels, atheists, Jews, Christians, Magians, and other infidels and heretics should be returned to dust. The vast scientific development, however, which the doctrines of the M. begot, and which resulted in the encyclopedic labors called 'The Treatises of the Sincere Brethren and True Friends,' was not without importance: see SINCERE BRETHREN.—See Weil, *Geschichte der Khalifen;* Sale's *Koran;* Steiner, *Mutaziliten;* Dieterici, *Transactions of the German Oriental Society*, etc.

MOTE, n. *mōt* [AS. *mot*, an atom: comp. Dut. *mot*, dust, sweepings: Sp. *mota*, a small particle]: a small particle, as of dust; anything proverbially small.

MOTE, n. *mōt*, or GEMOTE, n. *gĕ-mōt'* [AS.: Icel. *mót*, a meeting: Gael. *mod*, a court of justice]: in *AS. times*, a meeting, as in the *Witenagemot*, the assembly of wisemen. WARD-MOTE, in the *city of London*, the court or public meeting of the inhabitants of one of the wards into which the city is divided. FOLK-MOTE: see under FOLK.

MOTETT, or *motet*, n. *mō-tĕt'* [F. *motet*, a verse of a song, a short lay—from It. *mottetto*, a motet—from *motto*, a word, device]: name applied to two different forms of musical composition—1. A sacred cantata, consisting of several unconnected movements, as a solo, trio, chorus, fugue, etc.; 2. A choral composition, generally sacred, beginning with an instruction in the form of a song, perhaps with figurative accompaniment; after which follow several fugue subjects, with their expositions, the whole ending either with the exposition of the last subject, a repetition of the introduction, or a special final subject. A M. differs in this respect from a double or triple fugue, that the subjects never appear simultaneously, but are introduced one after the other. In one form of the M., the successive phrases of an entire chorale are treated as so many fugal subjects.

MOTH, n. *mŏth* [Dut. *mot*, dust, a moth: Norw. *mott*; Icel. *motti*, a mite, a moth: Goth. *matha*, a worm: OHG. *mado*, a maggot: Ger. *motte*, a moth]: a winged insect of several species, somewhat like and akin to the butterfly, generally seen in the twilight; a worm, the grub of a moth, that breeds in and consumes cloths, etc., laid up from the air; *figuratively*, that which gradually and silently consumes or eats away anything. MOTHY, a. *mŏth'ĭ*, full of moths. MOTH-EATEN, a. *mŏth-ēt'n*, full of holes by moths.

MOTH: popular name of all the insects in the section *Nocturna* of order *Lepidoptera* (q.v.). They formed the genus *Phalæna* of Linnæus, but are now distributed into many genera and families, the species being extremely numerous. Among them are the very largest *Lepidoptera*, also the smallest. They are distinguished from Hawk-moths, and from most of the butterflies, by their bristle-shaped antennæ, tapering from base to apex. The antennæ are frequently feathered or pectinated, especially in the males. The proboscis is generally similar to that of butterflies; but there are some groups of moths in which it is merely rudimentary, and these are supposed to take no food after they pass from the larva state. The thorax is generally shorter and more robust than in butterflies; the tibiæ of the legs often bear a kind of spur; the wings are held either in a horizontal or in an inclined position when at rest; or, in many of the smaller moths, are wrapped round the body. The two wings of the same side are generally hooked together in repose by means of bristles on the margin. The females of a few species are wingless.—Moths are generally nocturnal, though there are a few exceptions. They often exhibit great richness and beauty of colors, though in brightness of color not generally equal to butterflies. Their food is similar to that of butterflies.—They lay great numbers of eggs, which exhibit varieties of form and color as great as those of the insects themselves. Their caterpillars are more widely various in form and characters than those of butterflies; differing from each other in the number of their legs, and in horns, protuberances, caudal

appendages, hairy covering, etc. Some are social both in the larva and chrysalis state; forming, on their enter-

Lackey Moth:
A, the belt of eggs; B, the caterpillar; C, the pupa in its cocoon; D, the moth.

ing the latter state, very curious nests. The chrysalis of a moth is never angular nor furnished with protuberances, and is generally enveloped in a silken cocoon, close and compact; though some moth chrysalids are found in a mere space filled with threads which cross each other in various directions. Silk-worm (q.v.) moths are among the insects most useful to man; but moths in general are regarded as injurious, the larvæ of many feeding on leaves of various kinds, and often destroying valuable crops; and the larvæ of some small species being very destructive to clothes, books, etc. The largest and most splendid moths inhabit tropical countries. For some of the most interesting and important kinds of moth, see the separate titles: see also BUTTERFLY. Notwithstanding a popular dislike of moths, observation of their habits and of the richness of the color of many of them, is a favorite pursuit of naturalists.

MOTHER, n. *mŭth′ėr* [Skr. *mâta, matri;* Gr. *mētēr;* L. *mater;* Gael. *mathair;* Russ. *mater;* Icel. *modir*, a mother]: a woman who has borne offspring; a female parent; that which has produced anything; that which is oldest and chief; a familiar term of address to an elderly woman; the dregs from certain liquids, as vinegar; in *OE.*, hysterical passion: ADJ. native; natural; received from parents or ancestors: V. to adopt, as a son or daughter; to ascribe to. MOTH′ERING, imp. MOTH′ERED, pp. *-ėrd.* MOTH′ERLY, a. *-lĭ*, pertaining to a mother; becoming a mother; affectionate; tender: AD. in the manner of a mother. MOTH′ERLINESS, n. *-nĕs*, the quality of being a mother, or acting as a mother. MOTH′ERLESS, a. *-lĕs*, having lost a mother. MOTH′ERHOOD, n. *-hŭd*, state of being a mother. MOTH′ERY, a. *-ėr-ĭ*, containing thick,

slimy matter, as a liquid. MOTHER CHURCH, the oldest church in a large parish which has been subdivided into smaller ones; one's own church; the church that is deemed original or most ancient. MOTHER COUNTRY, the country from which a new country has chiefly been colonized. MOTHER TONGUE, one's native language. MOTHER WATER or LIQUOR or LYE, the liquid remaining after crystals have been obtained from it (see LYE: also Note, below). MOTHER WIT, native wit; shrewd common-sense. MOTHER-IN-LAW, the mother of one's husband or wife. MOTHER-OF-COAL, the name given by the miners to the fine silky-fibrous laminæ of carbon or mineral charcoal, which occur embedded in the seams of ordinary coal. *Note.*—MOTHER, as applied to the dregs of vinegar, oil, in etc. [Ger. *mutter;* Bohem. *mutka*, mother, or dregs of vinegar], is the same word, and 'the expression appears to b taken from the process of distillation or of salt-making, where the *mother* waters are the original source from which the spirits or the salts are produced. The *turbid residue* is the *mother*, after parting with the child, to which the process of manufacture has given birth. So in wine-making the crushed grapes are the wine in the *mother's* womb; after separation, the husks and stones are regarded as the *mother* from which the pure wine has been produced, the sediment subsequently formed from the wine being still regarded as part of the parent substance'—see Wedgewood.

MOTHER CAREY'S CHICKEN: name familiarly given by sailors to the Stormy (or Storm) Petrel and other small oceanic species of Petrel (q.v.).—The name MOTHER

Mother Carey's Chicken, or Storm Petrel (*Procellaria pelagica*).

CAREY'S GOOSE is, in like manner, given to the Great Black Petrel or Gigantic Fulmar (*Procellaria gigantea*) of the Pacific Ocean; a bird about three ft. in entire length, with very long wings, and blackish-gray plumage, a ravenous feeder on dead whales and all other animal garbage, and which also preys upon other sea-birds.

MOTHER OF PEARL: shells of the large bivalve mollusk *Meleagrina margaritifera,* which also produces the precious pearls (see PEARL). The term Mother of Pearl is applicable to all pearly shells; also to the hard internal nacreous layer, of iridescent lustre. The shells above named are collected in vast numbers in the tropical seas, chiefly on the coasts of Ceylon, Manilla, Cuba, Panama, and the South Sea Islands. Those from Panama are small and thick, and are known in commerce as 'bullock' shells; those from Manilla are finest in quality, often as much as 12 inches in diameter, round, and flat. There are two varieties—the white or silver-lipped, and the black-lipped. Although large quantities of these shells are consumed in inlaying fancy wood-work, papier mâché, and in making knife-handles and other objects, the greater portion is required for making buttons.

MOTHERWELL, *mŭth'ĕr-wĕl:* town of Scotland, in Lanarkshire, 11 m. from Glasgow. It is of comparatively recent origin, and takes its name from three farms called High, Low, and North Motherwell, which again derived their names from an adjoining spring, which in Roman Catholic times was dedicated to the *Virgin Mary,* and called the *Well of our Lady,* or *Mother's-Well.* The inhabitants are chiefly employed in the neighboring coal-mines, iron and steel works, foundries and engineering shops. Motherwell has some good churches, a town-hall, public park, good water supply, electric light, etc. Pop. (1901) 30,423.

MOTHERWELL, WILLIAM: Scottish poet and antiquary: 1797, Oct. 13—1835, Nov. 1; b. Glasgow. He was educated chiefly at the grammar-school of Paisley, where, in his 15th year, he entered the office of the sheriff-clerk. At the age of 21, he was appointed sheriff-clerk deputy of the county of Renfrew. In the following year he published his first work, *Harp of Renfrewshire,* containing biographical notices of the poets of that district, from the 16th to the 19th c. This work was but the prelude to one of far greater importance—*Minstrelsy, Ancient and Modern* (Glasgow 1827). In 1828, he commenced the *Paisley Magazine,* in which some of his finest original pieces first saw the light, and in the same year accepted the editorship of the *Paisley Advertiser,* a conservative journal. In 1830, he became editor of the *Glasgow Courier.* Motherwell in his best moods (but *only* then) shows a rich, beautiful, and strong imagination, great warmth and tenderness of feeling, and a thorough knowledge of the language of a poet. His *Jeanie Morison* is unsurpassed for the mingled pathos and picturesque beauty of its reminiscences of boyish love; *The Sword-Chant of Thorstein Raudi* is perhaps the most heroic rune in the English tongue.

MOTH'ERWORT (*Leonurus Cardiaca*): plant of nat. order *Labiatæ,* found about hedges and in waste places in Europe, and now abundantly naturalized in parts of

N. America. It is perennial, has a branched stem about

Motherwort (*Leonurus Cardiaca*).

three ft. high, stalked leaves, the lower ones 3-lobed, and crowded whorls of reddish-white flowers. The calyx has five pungent spreading teeth. The upper lip of the corolla is shaggy on the upper side, the lower lip trifid. The anthers are sprinkled with shining dots. The plant was formerly in much use as a domestic pectoral medicine, but is now little employed. It has a strong, but not agreeable odor.—Other species of the same genus are found in Europe and n. Asia.

MOTIFIC, a. *mō-tĭf′ĭk* [L. *motus*, moved; *fīō*, I am made]: producing motion.

MOTILITY, n. *mō-tĭl′ĭ-tĭ* [F. *motilité*, facility of moving —from L. *motus*, moved]: capability of moving; the faculty of moving.

MOTION, n. *mō′shŭn* [F. *motion*—from L. *mŏtiōnem*, a moving—from *movĕō*, I move: It. *mozione*]: change of place or of local position; the passing of a body from one place to another, as opposed to *rest* (see MOTION, LAWS OF); animal life and action (see MOTION, ANIMAL); manner of moving the body; change of posture; impulse communicated; tendency of the mind; internal action, as of the bowels; a proposal made at a meeting or an assembly; in a *locomotive engine*, the cross-head, cross-head guides, and the blocks, taken as a whole, are called 'the motion'; in *OE.*, a puppet; a puppet-show, usually illustrative of scriptural subjects, popular in England in the 15th c. and later: V. to make a significant movement with the hands, as to motion to a chair; in *OE.*, to advise; to make proposal. MO′TIONING, imp. MOTIONED, pp. *mō′shŭnd*. MO′TIONLESS, a. *-lĕs*, being at rest.

MO′TION, in Plants: see IRRITABILITY: SPORE.

MO′TION, ANIMAL, or strictly ANIMAL LOCOMOTION: that function in the exercise of which an animal is able to transport itself from place to place. It is possessed exclusively by animals, there being nothing strictly analogous to it in the vegetable kingdom. The organs employed in locomotion are of two kinds, the *passive* and the *active;* the former including all those textures which form the skeleton, and by which its segments are united, as fibrous and areolar tissue, synovial membrane, cartilage, fibro-cartilage, and bone; while the latter includes the muscles, with the nerves, which convey to them the mandates of the will.

Before noticing the different modes of progression of men and animals, it is proper to consider *standing*—one of the natural attitudes of an animal. This attitude depends on the form and functions of the limbs. Most of the terrestrial mammals and the reptiles (except the serpents), both of which use four feet in walking, have the backbone (the vertebral column) nearly horizontal (being only slightly concave downward), and resting, at the same time, both on the fore and on the hind legs. Birds, whose anterior extremities are intended for flight, stand upon the posterior limbs only, though in their case, too, the backbone is generally nearly horizontal when the animal is at rest. Man alone stands erect with his head supported on the summit of the nearly vertical vertebral column. Some other animals (monkeys, hares, kangaroos, etc.) can rise more or less erect, but in their case the attitude is obviously not the natural or an easy one. In standing, it is requisite that the limbs should be so arranged that the centre of gravity may fall within the space included by the feet. If the centre of gravity does not fall within this space, the animal cannot stand, but must fall to that side to which the centre of gravity inclines. On this account certain aquatic birds (e.g., the albatross), which have their feet placed very far back, cannot use them for walking. If an animal has four legs, it is not necessary that they should have the broad

base which is requisite in bipeds. Most quadrupeds have comparatively small feet, while birds are furnished with long toes, which, when spread out, form large bases of support. Moreover, the flexor muscles of the toes are so arranged that the weight of the body causes them to contract firmly; hence birds are enabled to sleep standing without any effort.

Walking is one of the common forms of progression. When it is accomplished by two legs only, as in man, the body is inclined forward, carrying the centre of gravity in that direction; and while one leg supports the body, the other is thrown forward to prevent it from falling, and to sustain it in turn. Hence, walking has been defined to be a continual falling forward, interrupted by the projection of the leg. Those writers who have especially studied the theory of walking (Borelli, the brothers Weber, and Bishop) have divided the time of a step into two portions—i.e., that in which only one leg rests on the ground, and that in which both legs rest on the ground. The period in which both feet are on the ground is shorter than that in which the body is supported by one leg only. During the time the body is supported by one leg, the other leg swings from behind forward, without the active intervention of its muscles, but by the mere force of gravity—in short, like the pendulum of a clock. When this leg is again placed on the ground, the first interval ends, and the other—i.e., that in which the body is supported by both legs—begins, and of course terminates with the raising of the other leg. The time that the body is supported by both legs diminishes as the velocity increases, and vanishes as the walk merges into a run; while, on the other hand, it attains its maximum in extremely slow walking, when it is found by experiment to amount to half the time in which only one leg supports the body. The greatest velocity of walking is attained when the time of a step is equal to half the duration of the motion of the swinging leg, and the velocity in walking of any given person depends on the time taken in making each step, and on the length of the steps; and both of these are dependent on the height at which the centre of gravity of the body or the heads of the thigh-bones are carried above the ground; for as the height of the latter diminishes, the length of the step is increased, while its time is diminished, and *vice versâ*. The most rapid walkers are incapable of acquiring a speed of more than seven miles an hour; and even this speed can be kept only a short time. The walking of quadrupeds is a similar process to that of bipeds, except that the body always rests on at least two legs. The limbs are raised in a determinate order, and usually in such a manner that the hind-leg of one side succeeds the fore-leg of the opposite side.

Running consists of the same succession of motions as walking; but these motions are so accelerated, that there is a period between two steps when the body is not supported on either leg; and this constitutes the essential

difference between the two paces. It requires a far greater expenditure of muscular force than walking, and cannot be long maintained without considerable exhaustion. First-rate runners can accomplish a mile in a few seconds less than four minutes and a half, and ten miles in an hour. (Levett in a match with Frost, 1852, March 22, at Copenhagen Fields, ran 10 m. 250 yards, in 52′ 53″, and Deerfoot ran 11 m. 740 yards, at Brompton, in an hour). In quadrupeds there are various paces besides walking, which are known as trotting, cantering, and galloping; and as the ordinary paces of the horse are familiar, that animal is taken for illustration. In *trotting*, the horse moves its legs in pairs diagonally. Thus, if the left fore and right hind leg be raised, and advanced first, the right fore and left hind leg will be raised the instant the others reach the ground. In fact, in trotting, the first pair are actually raised before the other legs reach the ground, so that there is a minute interval when all four feet are raised above the ground at the same time. The velocity acquired by moving the legs in pairs (as in running), instead of consecutively (as in walking), depends on the fact, that in trotting each leg rests on the ground during a short time and swings during a long time, while in walking the swing occupies a short period, and the rest a comparatively long one. In *cantering*, the animal, after advancing the two fore-legs one after the other, brings forward the two hind-legs simultaneously; and when this movement is greatly urged, the fore-legs are raised together, as well as the hind-legs, and the pace then becomes the *gallop*.

In *leaping*, the horse raises the fore-legs from the ground, and propels the body upward and forward by the hind-legs alone. This act in the horse is mainly the result of education, and those animals that leap or spring upon their prey (as the members of the cat tribe) crouch before leaping, in order to throw the body forward with the greatest possible force, by first bending all the limbs, and then suddenly extending them. As the hind-legs are, however, the essential agents in leaping, we observe that in those animals whose natural mode of progression is leaping—as frogs, hares, kangaroos, etc.—the hind-legs are much longer, and more muscular than the fore-legs. Leaping is a common mode of progression in many short-legged birds (blackbirds, thrushes, finches, sparrows, etc.,) in which the step would be extremely short if performed by moving the legs alternately. There is also a large number of insects, e.g., grasshoppers, fleas, etc., whose ordinary mode of progression is by leaps; and it is in this class of animals that the leaping power is developed to its greatest extent. The common flea, e.g., can leap 200 times its own length. While fleas, locusts, and grasshoppers leap by means of their long and strong hind-legs; other insects, as the *Poduridæ*, or spring-tails, possess a forked tail, which they bend beneath the body, and which, when suddenly extended, propels them to a considerable distance.

Climbing, is merely walking on an inclined or vertical surface. It is usually accomplished by means of sharp nails or claws, as in the cat-tribe, the lizards, etc. In many birds, as the woodpeckers, parrots, etc., the toes are arranged in two divisions, so as to grasp branches in the manner of a hand. Bears and sloths use their arms for climbing, while monkeys use their hands, and in some cases their tails. It is only in a very few cases, as in the sloth, that this is the ordinary method of progression.

The act of *flying* in the bird is accomplished by the simultaneous action of the two anterior limbs, the wings, much as leaping is by that of the two posterior limbs: see FLYING BIRDS. Many attempts have been made to estimate the velocity at which different birds can fly. Whether, as has been stated, the eider-duck can fly 90, and the hawk 150 m. in an hour, is questionable; but it has been ascertained that carrier-pigeons can accomplish from 38 to 42 m. in that time. The bats are the only mammals which possess a true power of flight. For a description of their organs and mode of flight, see BAT, where will be found also a notice of the false claims made for some other mammals, e.g., the flying-squirrel, to the possession of true flight. Similarly, the actions of the flying lizard and of the flying-fish are not true flight. In no class of animals is the mechanism of flight so perfect as in insects. The dragon-fly, e.g., can outstrip the swallow; and can do more in the air than any bird, as it can fly backward and sidelong, to right or left as well as forward without turning. The wings of insects, of which there may be either one or two pair, are analogous (as instruments of motion) to the feathered wings of birds, but are regarded as homologous to (or in their essential nature) branchiæ or respiratory organs. For details regarding the mechanism employed in aërial progression by insects, see INSECTS.

Swimming is the mode of progression employed by most aquatic animals. It differs from flying mainly in this respect, that water being much more dense than air, and the body of the animal being nearly of the same weight as the water that it displaces, very little effort is required to keep the animal from sinking; hence almost the whole of the muscular force can be employed in progression. In fishes, the locomotive organs consist of the fins and tail, the latter being the great propelling organ. The swimming of a fish has been correctly compared to the motion of a boat propelled by a single oar or scull at the stern. In the same manner as a succession of strokes alternately right and left propels the boat straight forward, so the fish advances by striking alternately right and left with its tail. The caudal fin, in which the tail ends, is vertical in fishes, and is usually considerably forked, when there is great speed. The ventral fins are for the purpose of keeping the fish in its proper position, with the back upward, as is shown by a well-known experiment of Borelli, who, after cutting off

these fins, restored the living fish to the water, when it rolled from side to side like a drunken man. The air-bladder with which many fishes are provided, and which they can distend and contract at pleasure, facilitates their swimming by enabling them to modify their specific gravity. Most terrestrial mammals, excepting man, swim at once the first time they find themselves in deep water. The reason of this is, that their limbs move in water precisely as they do on land, and no new action either as regards direction or order is required, as is the case with man, to enable them to swim. Those which frequent the water, as seals, otters, and beavers have webbed feet like ducks and other palmiped birds, the toes being united by membranes, which, when expanded, act as paddles. A large number of invertebrate animals move chiefly by swimming. Thus lobsters move by means of a vertical motion of the tail, and many of the crabs by means of their posterior legs, which are fashioned like oars. Many insects swim with their legs, which are fringed with hairs to give additional surface. The cuttle-fish uses its long arms as oars, and darts through the water with extreme rapidity; while other mollusks erect sail-like organs, by which they are propelled along the surface of the water.

For notices of the more special modes of progression, see a variety of specific titles.—See CRUSTACEA: SERPENTS: WORMS.

MO'TION, LAWS OF: fundamental principles connecting force and motion in the physical universe. They are obviously to be derived from *experiment* alone, since intuitive reasoning cannot possibly give information as to what may or may not be a law of nature. Though these laws are derived from experiment, it cannot be said that we have any very *direct* experimental proofs of their truth—our most satisfactory verifications of them are derived from the exact accordance of the results of calculation with those of observation in the case of such gigantic combinations of mutually influencing bodies as that of the solar system; and it is by such proofs that they must be considered to have been finally established. They seem to have been given systematically and completely first by Newton, at the opening of the *Principia*: but the first two laws were known to Galileo, and some of the many forms of a *part* of the third were known to Hooke, Huyghens, Wren, and others. They are here given in order, with brief comments, showing their *necessity* and *use*.

First, then, we naturally inquire, what matter would do if left to itself; and, by considering cases in which less and less external force is applied to a body, we are led to the statement called the *first law of motion:* 1. *Every body continues in its state of rest or of uniform motion in a straight line, except as it may be compelled by impressed forces to change that state.* This expresses simply the *inertia* of matter—i.e., a body cannot alter its state of rest or motion; for any such alteration external force is

required. Hence the definition of Force (q.v.), as that which changes or tends to change a body's state of rest or motion.

Now, how does the change of state depend on the force which produces it? This is obviously a new question, to be resolved by experiment; and the answer is the *second law of motion:* 2. *Change of motion is proportional to the impressed force, and takes place in the direction of the straight line in which the force acts.* Newton's silence is as expressive as his speech. Nothing is here said about the previous motion of the body, or about the number of forces which may be at work simultaneously. Hence, a force produces its full effect in the form of change of motion, whether it act singly, or be associated with others; and whatever, moreover, be the original motion of the body to which it is applied. Hence, there is no such thing as equilibrium of *forces;* every force produces motion—and what we call equilibrium is the balancing not of forces, but of their effects. Hence, the absurdity of attempting to found the science of Statics on any other basis than is to be derived from the second law of motion; which, in fact, leads us at once (by the *Parallelogram of Velocities*, a purely geometrical conception) to the *Parallelogram of Forces*, and thence, with the help of the third law, to the whole subject of Statics. The second law also supplies the means of measuring *force* and *mass;* and of solving any problem whatever concerning the motion of *one* particle.

But more is required before we can study the motion of a system of particles—as a rigid body, or a liquid, for instance; or a system of connected bodies. Here there are mutual actions and reactions of the nature of pressure or of transference of energy (see FORCE) between the parts—and these are regulated by the *third law of motion:* 3. *To every action there is always an equal and contrary reaction: or, the mutual actions of any two bodies are always equal and oppositely directed in the same straight line.* Thus, the mutual pressure between two bodies has equal, but *opposite*, values for the two. The tension of a rope is the same throughout, and tends as much to pull *back* the horse at one end as to pull *forward* the canal-boat at the other. The earth exerts as much attractive force on the sun as the sun exerts on the earth—and the same law applies to the other attractive and repulsive forces, as those of electricity and magnetism.

But Newton goes much further than this; he shows, in fact, that action and reaction (subject to the third law) may consist in *work done by a force*, instead of the mere force or pressure itself. From this form of the third law is derived at once the principle of Virtual Velocities (q.v.), which in its application to machines is familiar as '*What is gained in power is lost in speed.*' We derive also the grand principle of the indestructibility of work or energy: at all events in the case of the ordinary mechanical forces—and this must be regarded as one of the grandest discoveries which science owes to

Newton. It is true that he merely *mentions* it, and then abruptly passes to another subject; yet we can hardly exaggerate the value of this single remark. Experimenters, mainly Davy and Joule, have since shown that all the physical energies, as heat, light, electricity, etc., are subject in their transformations to the third law of motion, and thus the system constructed by Newton for ordinary dynamical purposes, is now found to rule the most mysterious affections of matter. For a development of this, see FORCE: also DYNAMICS: WORK: MECHANICAL POWERS: ETC.

MOTIVE, a. *mō'tĭv* [F. *motif*—from mid L. *motīvus*, that moves, animating—from *movĕō*, I move]: causing motion; able or tending to move: N. that which actuates or influences; that which determines the choice; inducement; cause; reason; in *art*, that which produces conception, invention, or creation in the mind of the artist, when undertaking a subject. MOTIVE, or MOTIVO, in a musical composition, the principal subject on which the movement is constructed, and which, during the movement, is constantly re-appearing in one or other of the parts, either complete or modified. In elaborate and long compositions there are also secondary motives MOTIVITY, n. *mō-tĭv'ĭ-tĭ*, the power of producing motion —SYN. of 'motive, n.': purpose; object; incentive; incitement; stimulus.

MOTLEY, a. *mŏt'lĭ* [OF. *mattelé*, clotted, curdled—from *mattes*, curds: Bohem. *matlati*, to smear, to daub]: speckled; covered with spots of different colors; composed of various parts or characters: see MOTTLE.

MOTLEY, *mŏt'lĭ*, JOHN LOTHROP, LL.D., D.C.L., etc.: 1814, Apr. 15—1877, May 29; b. Dorchester (now part of Boston), Mass.: historian. After graduating at Harvard Univ., he spent a year at Göttingen, another at Berlin, and travelled in Italy and other parts of s. Europe. Returning to America 1834, he studied law, and was admitted to the bar 1837; but, preferring literature, he wrote a historical romance, *Morton's Hope* (1839), which had little success. In 1840 he received the appointment of sec. of legation to the American embassy to Russia, but soon resigned, and, 1849, published another unsuccessful novel, *Merry Mount, a Romance of the Massachusetts Colony*. He attracted attention, however, by some valuable historical essays for American reviews, in particular one on De Tocqueville's *Democracy in America*, and another on 'Peter the Great.' Having planned a history of Holland, and finding a lack of adequate materials in the United States, he removed with his family to Europe 1851, and prosecuted his investigations in Berlin, Dresden, Brussels, and the Hague. After five years' labor he published 1856 *The Rise of the Dutch Republic*. In 1860 appeared a continuation: *The History of the United Netherlands from the Death of William the Silent to the Synod of Dort*. M. was appointed 1861 U. S. minister at the court of Vienna, a post from which he was recalled 1867. In 1869

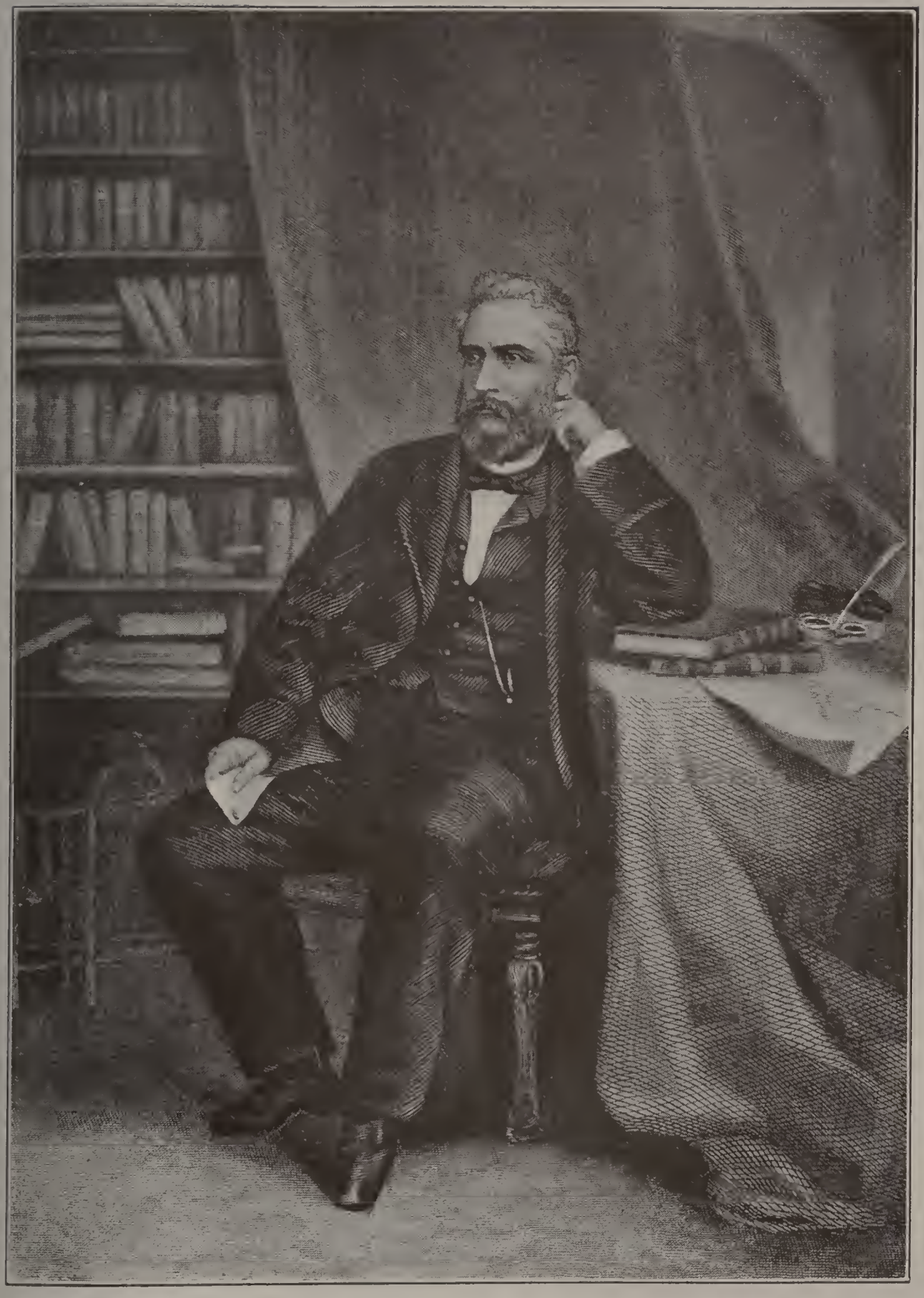
he was sent as minister to the court of St. James, bu was recalled the following year. In 1874 he published *The Life and Death of John of Barneveldt, Advocate of Holland; with a View of the Primary Causes and Movements of the Thirty Years' War* (2 vols). M.'s historical works are written with conscientious research, in graphic style and sympathetic spirit, have had great popularity, and have passed through many editions.

MOTMOT, *mŏt'mŏt*, or MOMOT, *mō'mŏt:* name given to various species of birds of the genus *Prionites* (of Illiger): the classification is uncertain.

MOTOGRAPH, *mō'tō-grăf:* electrical instrument for transmission of musical tones over wires; consisting of an apparatus for transmitting the sound, and another, at the other end of the line, for receiving. The former is a tube, over one end of which a diaphragm is placed; a platinum wire connects this with a platinum or a carbon disk, the parts being held in place by adjustable springs. The strength of the electrical current which passes through this portion of the instrument is varied by the unequal vibrations of the diaphragm caused by the differing force of the sound waves by which it is struck. The receiver is a box in which is a cylinder to be turned by a handle, and which winds over it from a reel a roll of paper which has been chemically prepared. By means of a spring a platinum wire is pressed upon the paper, and passes an electrical current through it to the cylinder. The positive pole of the battery is connected with the cylinder, and the negative with the platinum wire. The friction causes a tension upon the diaphragm which is relieved by the passage of the electrical current. Another form of receiver consists of a spring connected with a mica diaphragm and a moistened chalk cylinder. When the latter is turned the diaphragm is brought under a tension the degree of which is modified as the current is passed or checked. The intermittent current makes possible the transmission of musical sounds. By means of the M. vocal music has been conveyed over a telephone wire, and distinctly heard more than 100 m. The instrument was perfected by Mr. Edison.

MOTOR, n. *mō'tŏr* [L. *mōtor*, a mover—from *motus*, moved]: that which gives motion; a mover: ADJ. in *anat.*, producing or regulating motion, applied to certain nerves and muscles. MOTORY, a. *mō-tŏr-ĭ*, or MOTORIAL, a. *mō-tō'rĭ-ăl*, giving motion.

MOTRIL, *mō-trēl':* town of Spain, province of Granada, 35 m. s. of the city of Granada, in a productive district 3 m. from the sea. Agriculture and fishing are principal employments of the inhabitants, Pop. 16,665.



J. LOTHROP MOTLEY.

MOTT, *mŏt*, GERSHOM: 1822, Apr. 7—1884, May 29; b near Trenton, N. J. He studied at Trenton Acad., and went to New York to engage in commercial affairs. He was in the war with Mexico, served with distinction in the civil war, in which he was wounded several times, and received repeated promotions until 1865 he became maj.gen. in the army. The following year he retired to private life but was appointed 1873 maj.gen. of the National Guard of N. J., was elected state treasurer 1875, and was keeper of the state prison 1876–81. He died at New York.

MOTT, LUCRETIA: 1793, Jan. 3—1880, Nov. 11; b. Nantucket, Mass.; daughter of Capt. Thomas Coffin and wife of James M. When 15 years of age she became a teacher in a school of which Mr. M. was principal and in which she had previously studied. She removed 1809 to Philadelphia, was married there 1811, commenced teaching in that city 1817, and the following year became a minister of the Society of Friends, to which her parents and husband belonged. She was an adherent of the Hicksite branch, was an eloquent speaker, and travelled extensively on preaching tours. At the beginning of the anti-slavery movement she entered on it with great zeal, and went to London 1840 as a delegate to the World's Anti-slavery Convention. She was a leader in the Woman's Rights movements, being one of the four signers of the call for the convention at Seneca Falls, N. Y., 1848. She was an earnest worker in the temperance cause, was interested in the Woman's Medical College, Philadelphia, in the Peace Soc., and about 1868 in the establishment of Free Religious Associations in Boston. She died in the vicinity of Philadelphia.

MOTT, VALENTINE, M.D., LL.D.: 1785, Aug. 20—1865, Apr. 26; b. Glen Cove, N. Y. He attended a private seminary at Newtown, L. I., graduated from Columbia College 1806, studied in London and Edinburgh under Sir Astley Cooper and other eminent surgeons, and 1810 became prof. of surgery in Columbia College, New York. The medical faculty of this institution united 1813 with the College of Physicians and Surgeons, with which M. remained till 1826, and to which he returned after a connection for four years with the Rutgers Medical College, which was closed because of a defect in its charter. On account of impaired health he went 1835 to Europe, where he spent most of his time till 1841. He was one of the founders of the New York University Medical College, and was its prof. of surgery 1841–52. From the latter year till his death he was prof. emeritus. For a long period he was surgeon of the New York Hospital, and was also consulting surgeon to several of the other leading hospitals in the city. He was a bold and skilful operator, using the instruments with either hand, and combined with a perfect knowledge of anatomy a wide acquaintance with the laws of therapeutics which enabled him to save many lives. Sir Astley Cooper said that he

performed 'more of the great operations than any man living, or that ever did live,' yet he always declined to perform one that did not seem demanded by the exigencies of the case. He introduced various operations, invented instruments of great value, and gladly welcomed the inventions of others. He was a member of various societies, and published a number of valuable papers on surgical topics. He died in New York.

MOTTE (or MOTHE) CADILLAC', Sieur ANTOINE DE LA: see CADILLAC.

MOTTLE, v. *mŏt'l* [from MOTLEY, which see]: to mark with spots of different colors; to mark with shades of different colors, as if stained. MOTTLING, imp. *mŏt'lĭng.* MOTTLED, pp. *mŏt'ld:* ADJ. marked with irregular spots or streaks of different colors.

MOTTLEY, JOHN: see JOE MILLER.

MOTTO, n. *mŏt'tō* [It. *motto;* F. *mot*, a word, a motto—from mid. L. *muttum*, a mutter, a word]: short sentence or phrase added to a device, or prefixed to anything written, as to an essay or discourse, indicating its aim, or describing some rule of conduct, some custom, some opinion, or a tried sentiment. Motto, in *heraldry*, is a word or short sentence which forms an accompaniment to a coat-of-arms, crest, or household badge. Mottoes were originally attached to the badge when the family had one, or to the crest where there was no badge. In later heraldry, the practice is to place the M. in an escrol either over the crest or below the shield. A M. is sometimes a religious or moral sentiment, as 'Gardez la foi,' 'Humanitate;' it is not unfrequently a heroic exclamation or war-cry, 'Courage sans peur,' 'Forward.' In a great many cases it bears reference to the crest, badge, or some bearing of the escutcheon; and not a few mottoes are punning allusions to the family name—as Scudamore, 'Scuto amoris Divini;' Vernon, 'Ver non semper viret;' 'Fare, fac,' for Fairfax; and 'Time Deum, cole regem,' for Coleridge. Two mottoes are sometimes used by the same family—one above the crest, the other below the shield. The motto, 'Dieu et mon Droit,' which accompanies the royal arms of Great Britain, is supposed to have been a war-cry, and was used in England at least as early as the time of Henry VI. Its origin has been assigned to a saying of Richard I., 'Not we, but God and our right have vanquished France.'

MOUCHARD, n. *mô-shâr'* [F.]: a police spy; a term of contempt in France.

MOUCHETTE, n. *mô-shĕt'* [F.]: in *arch.*, a hollow or canal sunk in the soffit of a corona to form the larmier or drip.

MOUFFLON, *môf'lŏn*, or MUSMON, *mŭs'mon* (*Ovis* or *Caprovis Musimon*): the wild-sheep of Corsica, Sardinia, Cyprus, Greece, etc.; said to represent the original stock from which the domestic sheep is derived. It is about the size of a small fallow-deer, covered with hair and not with wool, except that hair of a somewhat woolly character appears in winter. The upper parts are brownish, the under parts whitish; the hair of the neck is long; the tail is very short. The horns of the male are very large, approaching to those of the Argali. The Moufflon lives chiefly in the higher parts of mountainous regions, and is not easily approached.

MOUKDEN. See MUKDEN.

MOULD. See MOLD.

MOULD, *mōld*, JACOB WREY: 1825—1886, June 14; b. Chiselhurst, Kent, Eng. He graduated from King's College, London, 1842; studied architecture under Owen Jones, with whom he was associated in the decoration of the World's Fair building 1851; came to New York 1853 to design and superintend the building of All Soul's Church, and 1857-70 was assistant architect of public works, and designed bridges, terraces, and various structures in Central Park. He became chief architect 1870, resigned four years later to take a position in Lima, Peru, and from 1880 till his death was again on the architectural staff of the park commissioners of New York. He designed the temporary tomb of Gen. Grant, illustrated several books, and was a fine musician. He died in New York.

MOULDER, MOULDERING. See under MOLD 1.

MOULDING. See MOLDING.

MOULD-WARP. See under MOLD 1.

MOULDS. See FUNGI.

MOULIN, n. *mô'lĭng* [F. *moulin*, a mill—from mid. L. *molīnus*]: a deep crack intersecting a glacial rivulet, that has been formed into a shaft some hundreds of feet deep by the wearing action of the water.

MOULINS, *mô-lăng'*: town of France, cap. of the dept. of Allier, on the right bank of the river Allier, here crossed by a handsome stone bridge of 1,000 ft. in length with 13 semi-circular arches; 213 m. by railway s.e. of Paris, 95 m. n.w. of Lyon. It is 740 ft. above sea-level. Moulins was formerly cap. of Bourbonnais. It is a clean, well-built town, with pretty promenades. The principal buildings are the cathedral of Notre Dame (for the enlargement of which the sum of one and a half million francs was granted 1852), the museum, the theatre, the public library of nearly 25,000 vols., the new town-house,

the Palace of Justice, and the college. Of the old castle, built by the Duc de Bourbon 1530, only a square tower remains, which is used as a prison. Moulins carries on trade in coal, wood, iron, grain, wine, oil, and cattle. Pop. 22,340.

MOULMEIN, *mowl-mīn′:* town in the province of Tenasserim, British Burmah, on the Gulf of Martaban, in the e. of the Bay of Bengal, at the junction of the rivers Salween, Gyne, and Attaran; 16° 29′ n. lat. and 97° 38′ e. long. Moulmein, one of the healthiest stations in India, is a pretty specimen of an eastern town. It is divided into five districts, each under a goung or native head of police. The streets are mostly shaded with trees, principally of the acacia tribe, and the glossy jack is often seen half covering a native house, its great fruit, as large as a child's head, ripening in the sun. The principal street, about 3 m. in length, runs due n. and s. and parallel with the river Salween. The native houses are constructed in the usual Burman style of bamboo, and a thatch made of the leaf of the water-palm. All are raised on piles, according to the universal custom of the country. Men walk about with the green paper chattah, or Chinese umbrella, used throughout the provinces; the *gharie*, or India cab, dashes along, the attendant imp revelling in heat and dust.

Moulmein is backed by a fine range of hills, on whose heights flash the gilded spires of innumerable pagodas; and here, too, are many pretty residences, commanding a fine view of the town, river, and adjacent country, which for picturesque beauty and varied scenery has few equals. Moulmein has various churches, chapels, and missionary establishments, several charitable and educational institutions, substantial barracks, a general hospital, public library, etc. Vessels drawing 10 ft. of water can come up to Moulmein, under charge of pilots from Amherst, and at spring-tide ships of any tonnage may reach the town. The rise and fall of the water is at that time 20 to 23 ft. The mean temperature of Moulmein is about 78°—the highest being 96° in Apr., the lowest 61° in Jan. Moulmein possesses great facilities for ship-building, and many fine vessels have lately been constructed in the building-yards of Tavoyzoo and Mopoon. The principal exports from Moulmein are teak-timber and rice; the imports consist of general merchandise, chiefly piece-goods, hardware, provisions, and sundries. Pop. (1881) 53,080; of which about 27,000 Buddhists, 11,000 Hindus, 6,000 Mussulmans, 2,000 Christians. In nationality, beside Burmans proper, the pop. includes Eurasians or half-castes, Taliens, Chinese, Shans, Karens, Armenians, Jews, Malays, and natives of Hindustan. Pop. (1901) 58,446.

See *The Tenasserim and Martaban Directory;* Winter's *Six Months in British Burmah* (Lond. 1858); Marshall's *Four Years in Burmah* (Lond. 1860); *Blue-Books.*

MOULT, v. *mōlt* [Ger. *mausen*; Dut. *mauen*, to mew or moult: Norw. *muta*, to hide or seek covert, as a bird casting its feathers: comp. Gael. *maol*, bald, bare; *maolte*, made bald (see MEW 2)]: to cast or shed the feathers, as a bird at a particular season; to shed or cast, as the hair, skin, horns, etc., of animals. MOULTING, imp.: N. the time when birds cast their feathers; the act or progress of casting the feathers. MOULT'ED, pp.—*Moulting* is the periodical exuviation, or throwing off of certain structures, mostly of epithelial or epidermic character. Thus, in a considerable number of the *Articulata*, the external covering is thrown off, and replaced many times during life. In some minute Entomostracous Crustacea a process of moulting similar to that in crabs and lobsters, occurs every two or three days, even when the animals seem to have attained full growth. In the crabs, in which the process has been carefully observed, the *exuvium*, or cast-off shell, consists not only of the entire external covering, including even the faceted membrane which forms the anterior coat of the compound eyes, but also carries with it the lining membrane of the stomach, and the plates to which the muscles are attached. During growth, moulting takes place as often as the body becomes too large for the shell; and after the animal has attained its full size, it is found to occur at least once a year, at the reproductive season. During the early growth of insects, spiders, centipedes, etc., a similar moult is frequently repeated at short intervals, but after they have attained their full size, no further moulting takes place. In the *Vertebrata* we have examples of as complete a moulting and replacement of new skin, among frogs and serpents, as occurs in the Articulata, the whole epidermis being thrown off at least once, and, in some instances, several times yearly. In birds, the feathers are periodically cast off and renewed; in mammals generally, the hair is regularly shed at certain periods of the year; and in the deer tribe the casting off and renewal of the antlers must be regarded as a special example of moulting. In man, the continual exuviation of the outer layers of the epidermis is a process analogous to that which takes place on a more general scale in the lower animals.

MOULTON, *mōl'ton*, LOUISE CHANDLER (early pen-name, ELLEN LOUISE): b. 1835, Apr. 5, Pomfret, Conn. She was educated at a seminary in Troy, N. Y.; at the age of 15 commenced writing for the periodical press, and four years later published her first book, *This, That, and the Other*, which had a large sale. She married, 1855, William U. Moulton, a Boston publisher, has written for various magazines and furnished letters on society and literary topics to leading newspapers. Among her numerous works are *Juno Clifford*, *Some Women's Hearts*, *Random Rambles*, and *Ourselves and Our Neighbors*.

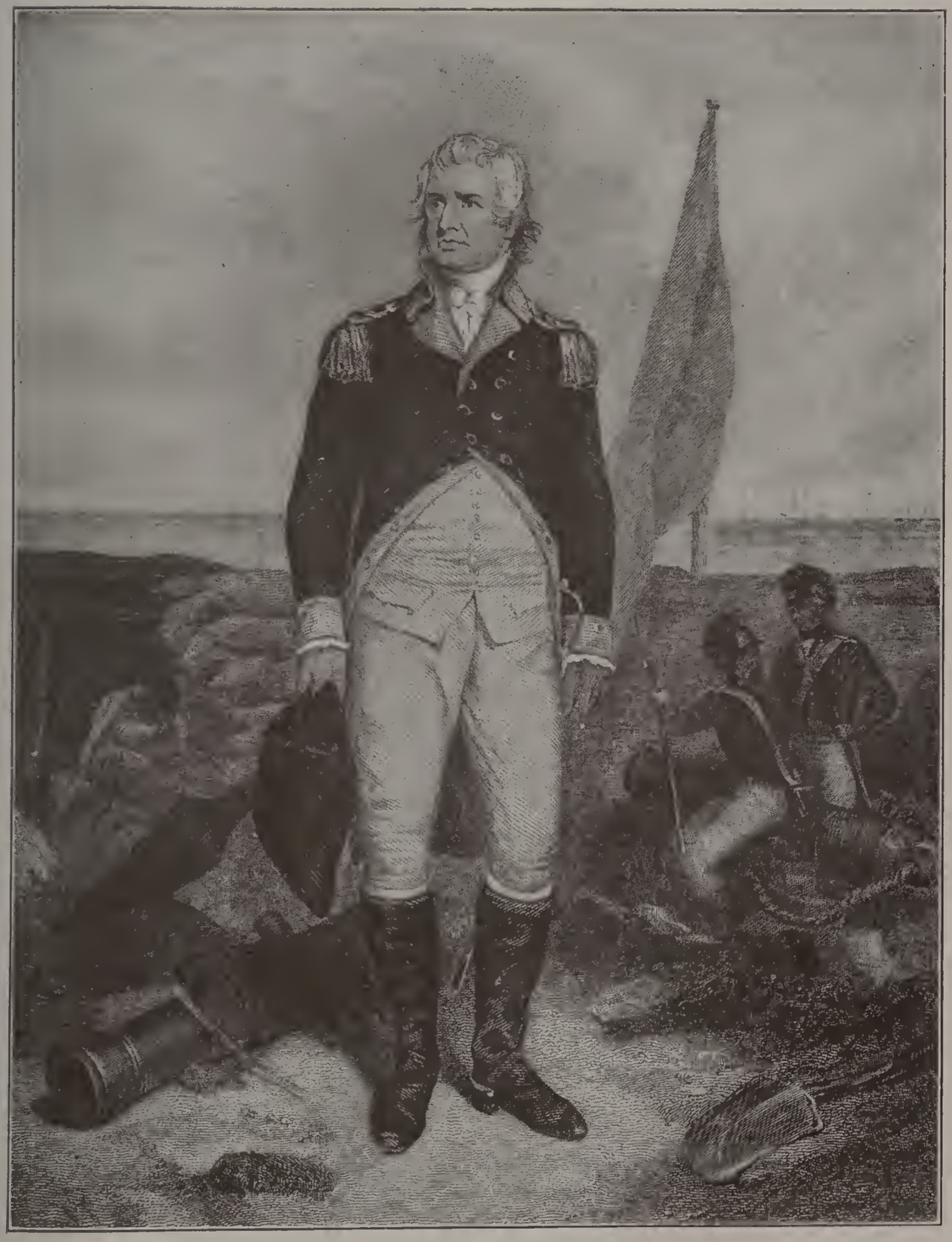
MOULTRIE, *mō′trī*, WILLIAM: 1731–1805, Sep 27; b. England. His father, who was a Scotch physician, settled in Charleston, S. C., about 1733. In the troubles with the Cherokees 1761, M. was capt. in the state militia. During the Revolution he was, in opposition to the wishes of his tory relatives, an active patriot. He was placed in command of a regt., and 1775 was a member of the continental congress. While fortifying Sullivan's Island in Charleston harbor 1776, a British naval force of five vessels opened fire on his works, which he defended with such skill and bravery that after a conflict of more than nine hours the enemy retired. Since that time the fort has been called Moultrie in honor of its defender. He was promoted brig-gen. of the continental army, and had charge of a dept. embracing S. C. and Ga., the affairs of which he managed with great skill. He was victor, near Beaufort 1779, in an engagement with a British force larger than his own, and by holding the enemy in check enabled the people of Charleston to fortify the city when it was threatened by the British under Prevost. When, 1780, Charleston was forced to surrender, M. was taken prisoner. He was held by the British for almost two years and refused tempting bribes to desert the American cause. He was released 1782, and in the same year was appointed maj.-gen. In 1785 he was gov. of S. C. and also 1794–96. He published two vols. of *Memoirs of the American Revolution so far as it Related to the States of North and South Carolina and Georgia*. He died at Charleston, S. C.

MOULTRIE, FORT, *mō′tri* or *mōl′trē*: defensive work on Sullivan's Island, at entrance to Charleston harbor, S. C., originally constructed 1776 of palmetta logs and earth, and mounted with 26 guns. It resisted the attack of a British fleet of 9 vessels with 270 guns during the revolutionary war. It was subsequently rebuilt with masonry, but with a very low scarp-wall; and in the first days of the rebellion was abandoned by Maj. Anderson, 1860, Dec. 26, for Fort Sumter, the stronger work near by. F. M. was strengthened by the Confederates and fired the first gun in the civil war (upon the steamer *Star of the West*), 1861, Jan. 9. Since the war it has been further improved to sustain and resist modern ordnance.

MOULUWEE, n. *mûl′ŭ-wē*, or MAULAVI, n. *mûl′ē-vĭ*, or MOULVIE, n. *mûl′vē* [Ar. *maulavi*]: in *India*, a learned man; a Mussulman priest.

MOUNCH, v. *mownsh*, OF. for MUNCH, which see, MOUNCH′ING, imp. MOUNCHT, pp. *mownsht*.

MOUND, n. *mownd* [AS. and Icel. *mund*, hand, a protection or defense: AS. *mundian*, to protect: OHG. *munt*, a protection]: an artificial bank of earth or stone, raised for defense or ornament. ANCIENT MOUNDS (see AMERICA, *American Antiquities*). SHELL-MOUNDS, masses of refuse shells found along many shores, and marking the feasting-places of the early and savage inhabitants.



WILLIAM MOULTRIE.

MOUND, n. *mownd* [L. *mundus*, the world]: in *heraldry*, a globe, surmounted with a cross (generally) pattée. As a device, it is said to have been used by Emperor Justinian, to represent the ascendancy of Christianity over the world. The royal crown of England is surmounted by a mound, which appears first on the seal of William the Conqueror, though the globe without the cross was used earlier.

MOUNDS AND MOUND BUILDERS. Artificial mounds belong to every age and almost every country. As soon as primeval man learned to use a stick for digging and a skin for carrying, he could pile up earth or stones. The custom, early begun, survived into all the nations of antiquity, in some cases to well within the Christian era. As inchoate civilization emerged from barbarism, and crude conceptions of government and religion began to take definite form, strictly utilitarian features gradually blended with others of symbolic or occult nature. A slight covering to protect a corpse from wild beasts foreshadowed the great tumulus; from a little heap of earth to raise a hut out of the mud evolved immense foundations for temple and palace. No monument can be more enduring; and thus do we know that man has built mounds whenever and wherever he has lived. Consequently, theories advocating relationship, or tracing lines of migration, or seeking to prove descent, among peoples or races in different parts of the world, when based solely upon a practice so widely prevalent, are, from the nature of the case, untenable. Particularly is this true in regard to Mound Builders of the Mississippi valley. The simpler structures erected by them resemble such works in other parts of the world only as any ordinary pile of earth or stones will resemble any other. When this limit is passed, when search is made for types to correspond with their elaborate enclosures or their large mounds which depart widely from common forms, it is found that such do not exist elsewhere. All these works, from the simplest to the most complex, appear to follow a line of continuous evolution which nowhere touches a similar line. There is no evidence that the Mound Builders are connected as either ancestors or descendants with people even as near at hand as Cliff Dwellers or Aztecs; the Rocky Mountains and Great Plains seem to have always formed an impassable barrier to considerable movements between east and west. Assertions of the derivation of those in one section from those in the other are based upon fortuitous resemblances which might be used with equal value in various other directions; or upon the occurrence in eastern or northern mounds of objects which show undeniable indications of Mexican origin. The latter consist mainly of thin copper plates, or sea-shells, or other minor objects, impressed or engraved with complicated emblematic figures. They are few in number, light in weight, widely scattered in

locality; and could easily be procured from traders, such as ranged the entire country within historic times, and transported small articles in traffic for hundreds, even thousands of miles. So the mounds of the Mississippi valley must be regarded as the work of a people who acted entirely upon their own initiative, and concerning whose pristine habitat and affiliations nothing is known.

The caption of this paper properly covers all prehistoric aboriginal structures of earth, stone, or shell, east of the Great Plains; for such is the ordinary, or popular, conception of the term.

From the first, small mounds along the Atlantic slope were recognized as Indian burial places; no other interpretation was necessary. When explorers of the wilderness region between the Appalachians and the Mississippi brought back statements in regard to the number and magnitude of mounds, the form and extent of earthworks, which found no parallel elsewhere, those who assumed that the American Indian had never been different from the hunter and warrior they knew him to be, felt impelled to look beyond him for a constructer capable of such a task. Others, willing to concede to the Indian a more industrious temperament when he had a motive for exercising it, could see no reason for not crediting him with all the remains, large or small, the difference being only in the amount of work involved. The former theory, having the merit of invoking the unknown and mysterious, was advocated by a majority. As more elaborate reports came in from time to time, based generally upon incomplete examinations and deducing conclusions from data which have not withstood later analysis, there gradually arose a belief in a more cultured race antedating the Red Indian.

In the middle of the 19th century appeared the great work of Squier and Davis, *Ancient Monuments of the Mississippi Valley*. The illustrations it gave of enclosures in Ohio and adjoining states, the description of these and of apparently similar works elsewhere, the results of excavations, the figures of artificially wrought objects obtained from mounds, all betokened a stage of progress greatly beyond the achievement of known Indians north of Mexico. This volume gave encouragement and impetus to succeeding writers, who soon evolved a great empire, densely populated, highly civilized, dominating the entire country from the Atlantic Ocean to the Rocky Mountains, from Canada to Mexico, with a fully organized system of religion and government, and subject to one central authority whose seat was, presumably, in the Scioto valley. This view, stimulating to imagination, met with general approbation; but there were always some who could present cogent reasons for dissenting from it. Within the past quarter century methodical investigation has shown such marked variation in size, design, outward appearance, interior arrangement,

and contents, of structures in different sections, as to compel the disruption of this mythical nation into many unconnected tribes whose relationship to one another, if indeed there be any, is very doubtful and obscure. Works of distinctive character are mostly confined to somewhat limited areas; typical forms are rarely found more than about a hundred miles from where they are most common. In other words, a district of about two hundred miles across will, as a rule, contain earthworks much resembling one another but quite different from those of any other district of equal size; though in a few instances a single structure or a small group occurs in a locality quite distant from others of its kind. Conversely, mounds near together may be so unlike as to make the conclusion unavoidable that they pertain to alien tribes. Small mounds of earth, or stone, or both combined, intended merely for a covering over the dead, are outwardly so much the same that it would be quite natural to consider them the work of one people; but the great diversity in character and arrangement of their contents show that resemblance is not intentional but due to material and methods of utilizing it. The same is also true of many large mounds.

Mound Builders' works may be considered under two general heads—MOUNDS and ENCLOSURES.

MOUNDS.—The most satisfactory basis for classifying mounds is their form. There are three principal types:

(1) *Conical.*—These rise in a gradual and quite uniform curve from a circular base to a central summit. Dome-shaped would be a better term. They range from less than two feet to nearly seventy feet in elevation. The diameter, where undisturbed by cultivation, is never less than four and from that to ten times the height. Nearly all are built of earth, though a few are entirely of stone, while some are composed of both materials. Along the southern Atlantic and Gulf coasts many are built of shells. North of the Potomac and east of the Alleghanies scarcely any are found; in Virginia they reach well toward tide-water, and thence extend to and throughout all the states as far as Minnesota and Louisiana, rapidly diminishing in size beyond the Mississippi. Sometimes the base is elongate, making the mass half-ellipsoidal or half-ovoid. Conical mounds almost invariably contain human remains. Usually bodies were placed directly on the natural surface; sometimes a grave was dug. Burials also took place as the work progressed. The volume of earth has no relation to the number of interments; one of the larger mounds of Ohio covered a single skeleton, while in Virginia nearly four hundred skulls were found in a very small one. A few of the largest conical mounds have truncated summits.

(2) *Pyramidal.*—These are mostly quadrilateral (the opposite sides not always even approximately equal), though a few are pentagonal or hexagonal in outline.

The sides are commonly as steep as earth will stand and in most of the larger ones the top, always truncated and practically level, is reached along a gentle slope starting at some distance from the base. Dimensions vary greatly; some are not more than six feet high and 50 or 60 feet across, while the great Cahokia mound at East Saint Louis is nearly 100 feet in height and covers about 16 acres. Many have a terrace or platform on one or more sides; where more than one terrace, they are generally at different levels. Each terrace possibly represents a plane at which construction ceased for a time and was renewed on a smaller scale. North of the Ohio river this form is found only at Marietta, Ohio; Evansville, Indiana; and in the vicinity of Saint Louis. The few others in northern states are low, small, and have no approach. With these exceptions the type is confined to the region from eastern Tennessee to southern Missouri and south to the Gulf. Their purpose, in part at least, was to provide an elevated place for an important building; protection from floods; perhaps a refuge from foes. A few skeletons and relics are reported in some, nothing in others; a small one at Etowah, Georgia, seems intended for a tumulus.

(3) *Effigy.*—These, almost invariably of earth, crudely resemble the outlines of various animals; the species can seldom be determined. Some called 'human' figures are probably attempts to portray flying birds. They exist by thousands in the territory for 50 miles around the mouth of the Wisconsin river, beyond which limit they rarely occur; the most notable exceptions are the Serpent and the Opossum of Ohio, and the Eagle of Georgia, the latter entirely of stone. Associated with the Wisconsin effigies are straight embankments from 50 to nearly 1,000 feet in length and three to five feet high; also long rows of small conical mounds sometimes joined together by low ridges. No hint of their purpose has resulted from explorations in the effigies.

Shell heaps are numerous from the head of Chesapeake Bay around the coast to the west part of the Gulf, also along some of the interior rivers where mussels abound. Most of them are 'kitchen refuse,' extending sometimes for miles; others are mounds similar in construction and use to those of earth.

The 'Garden Beds' of southern Michigan are narrow raised ridges from one to three feet high, separated by passageways, and forming plats usually rectangular but sometimes circular. Occasionally they include a hundred acres, though generally much smaller. Their apparent use is to prevent flooding of crops. They have no resemblance to low mounds abundant from Missouri to Texas, to which some writers have assigned a similar use.

The term 'lookout' or 'signal' applied to mounds on high hills is a misnomer; they were not so used.

ENCLOSURES.—Enclosures comprise all embankments of earth or stone which surround a definite area. There is

usually, but not always, a ditch, mostly interior, sometimes exterior, rarely one on each side. Double or even triple concentric walls, with ditches, exist. Enclosures come under three heads:

(1) *Geometric*, with two sub-divisions:

(a) *Large;* approximately square, rectangular, circular, elliptical, or rhomboidal; confined to southern Ohio, and adjacent parts of Kentucky, West Virginia, and Indiana; always on fertile, level land, accompanied by mounds and village-sites. The walls are sometimes ten feet high, with a corresponding ditch. Incorrect statements early led to a belief in the mathematical accuracy of their lines and angles. Careful surveys have failed to reveal one thus constructed, though in some cases the departure is very slight; the diameters of one square vary only two feet in eight hundred and fifty; and one circle with a radius of nine hundred and fifty feet diverges only four feet from a true line. In other cases, however, the error is ten per cent. or even greater. Many theories have been advanced to explain these works; all of them find objections.

(b) *Small;* similar in form to the above, but of wider distribution; seldom as much as two hundred and fifty feet across from outside to outside; always with the ditch interior when there is one; often with a mound on the included level area; with one opening, usually toward the east, sometimes to north or south, seldom west; located from low bottoms to highest uplands; in groups, or singly miles from any other works. They no doubt mark the sites of communal dwellings, council houses, or lodges, according to size and situation.

(2) *Hill-top Forts.*—This division includes, here, only the great structures of southern Ohio, situated on high isolated peaks, or precipitous ridges; usually having an interior ditch. They seem to be in some way connected with the large enclosures, though often many miles from the nearest group. Some are altogether of stone; typical is that in Ross county, enclosing one hundred and forty acres. Others are mostly or entirely of earth, as Fort Ancient, whose walls are more than three and a half miles long and in some parts nineteen feet high.

(3) *Irregular Defensive.*—These embrace all protective works, from a straight wall across a high promontory or a bend in a stream to combinations of rudely elliptical or circular enclosures with wing walls and supplementary banks or ditches covering many acres. Topographical features largely determine their form and extent; main embankments commonly follow contour lines, extensions go where needed. They abound from Canada to the Gulf, from New England to the middle Missouri river, though of course unequally apportioned. Clearly intended for safeguarding villages within or near them, their moderate height denotes the use of palisades as among Iroquois and other modern tribes.

DEDUCTIONS.—The Mound Builders were not one nation

or even one community, but comprehended many different tribes, each of which had its own territory. There was not a dense population except in certain very limited areas. Their towns were no larger than many Indian settlements in the 18th century. Large tracts were practically unoccupied. They lived like Indians. They had no alphabet. They could not build a stone wall that would stand without support. They had no beast of burden, no domestic animal unless the dog. They never walled up a spring. They had not the potter's wheel. Cement or mortar was unknown. They had no corn mill as serviceable as a Mexican metate. They could not work any metal except as a stone to be rubbed, chipped, or beaten into desired forms. Their agricultural implements were of stone, shell, bone, and wood. Their most efficient cutting instrument was a flint. Tools, implements, and ornaments were laboriously chipped, or rubbed into form with gritty stones. Their pottery was inferior to that from the Pueblo region. Their flint work was not equal to that of the latter-day Northwest Indians or in the stone graves of Tennessee. Their shell work was behind that from Indian graves along the eastern coast. In pipes alone did they excel, and this only in a special locality. In symmetry and finish, relics from mounds do not surpass similar, unweathered, objects from the surface or from modern graves and village-sites. Earthworks were built by gathering material at convenient spots in baskets or skins holding about half a cubic foot, and dumping it where needed. A mound 20 feet high and 100 feet in diameter could be built in 20 days by 100 men, each carrying one cubic yard a day. Mound building evidently extended through many centuries. Small tumuli around the Great Lakes contain articles procured from whites, some of them quite recently. De Soto found heavy embankments surrounding 'very high mounds,' some of them 'large enough to give room for twenty houses' on the top, all erected by the natives then living on them. On the other hand, not one of the large mounds of the Ohio valley has yielded any European object not intrusive. Weight of evidence warrants the assertion that prehistoric builders of northern mounds were American Indians of the same status as the agricultural Indians of the Gulf states who built mounds less than four centuries ago. They were more advanced than the roving hunting tribes encountered by pioneer whites.

MOUNDSVILLE, *mowndz'vĭl:* W. Va., city, county-seat of Marshall county; on the Ohio river, and on the Ohio R. and the Baltimore & O. railroads; about 12 miles south of Wheeling. It is situated on a point of land, about a mile wide, at the confluence of the Big and the Little Grave creeks. It was once called Grave creek, and at first there were two small villages called Elizabethtown and Moundsville. The present name is on account of the Mammoth Mound nearby, one of the largest ancient

mounds in the United States. In the vicinity are other mounds classed as the Grave Creek group of mounds. The Mammoth Mound is connected with a series of earthworks of ancient construction, and is 820 feet in circumference, at the base, and 63 feet in diameter at the summit. It is about 70 feet in height. In the chambers have been found shell beads, ornaments made of mica, others carved in stone, copper bracelets, and other ancient articles. Moundsville is in an agricultural and coal region and the industries are connected with farming and coal mining. Pop. (1900) 5,362; (1910) 8,918.

MOUNT, n. *mownt* [F. *mont*, a hill; *monter*, to rise up —from L. *montem*, a mountain; comp. Gael. *monadh*, a heath, as on mountain]: a hill or mountain; an artificial elevation; the paper or card-board upon which a drawing is placed, and to which it is attached: V. to ascend; to rise on high; to get or place on horseback; to raise aloft; to set in framework; to tower; to climb; to scale; to furnish with horses; to embellish; to adapt or fit to, or to set upon, as *to mount a gun*, that is, to set it upon, a carriage—*to mount a precious stone*, that is, to set it in a framework of metal, as in a ring or brooch. MOUNT'ING, imp.: carrying, as a ship mounting so many guns: N. the act of mounting; the act of preparing for use; that by which anything is equipped or embellished. MOUNT'ED, pp.: ADJ. raised; seated on horseback; embellished; furnished with, as with guns; placed on a carriage. MOUNT'ER, n. *-ẽr*, one who or that which mounts. MOUNT'INGLY, ad. *-lĭ*. TO MOUNT GUARD, to do duty and watch at a particular post for a limited time, as a sentinel. MOUNT IN BASE, in *heraldry*, representation of ground slightly raised and covered with grass, occupying the lower part of the shield.

MOUNTAIN, n. *mownt'ĭn* or *-ān* [OF. *montaigne;* F. *montagne*—from mid. L. *montānĕă*, a mountain: L. *montānus*, belonging to a mountain—from *montem*, a mountain: It. *montagna*]: a very high hill, usually applied to heights of nearly and above 2,000 ft. (see MOUNTAINS); anything proverbially large: ADJ. pertaining to a mountain; found on mountains. MOUNT'AINEER', n. *-ēr'*, an inhabitant of a mountainous district. MOUNTAINEER'ING, n. *-ēr'ĭng*, the pursuit of the practices and habits of mountaineers; the ascending of mountains. MOUNT'AINOUS, a. *-ŭs*, full of mountains; huge. MOUNT'AINOUSNESS, n. *-nĕs*, state of being full of mountains. MOUNTTAIN-ASH, a tree producing large bunches of red berries, called in Scot. the rowan tree; the *Pyrus aucupărĭă*, ord. *Rosācĕæ* (see ROWAN TREE). MOUNTAIN CORK, LEATHER, WOOD, and PAPER, varieties of Asbestos (q.v.). MOUNTTAIN-DEW, Scotch whisky, especially that which has paid no duty. MOUNTAIN GREEN and BLUE, familiar terms for the green and blue carbonates of copper, mountain being at one time used as synonymous with mineral (see

CHRYSOCOLLA). MOUNTAIN-LIMESTONE, thick-bedded, marine, carboniferous limestone, familiarly applied to that found in hills, in distinction from that in the low-lying districts. It is the basement rock of the carboniferous series in s. England and in Wales, consisting of a calcareous rock loaded with marine remains, the greater part of the rock being made bodily of corals, crinoids, and shells. It has variable thickness, sometimes as much as 900 ft. In n. England and in Scotland, the marine limestones are not separated from, but alternate with, the coal-bearing strata. See CARBONIFEROUS SYSTEM. MOUNTAIN-MEAL, an infusorial earth, called also *bergmahl.* MOUNTAIN-MILK, a soft variety of carbonate of lime. MOUNTAIN PARSLEY and ROSE, plants. MOUNTAIN-SOAP, a variety of soapstone or silicate of magnesia. MOUNTAIN-TALLOW, a tallow-like mineral. A MOUNTAIN CHAIN or RANGE, a series of elevations, more or less lofty, having their bases in contact and continuous over a considerable extent of country. TO MAKE A MOUNTAIN OF A MOLE-HILL, to make great out of little difficulties. MOUNTAIN IN LABOR, much and varied preparation with but little result, from the *fable* of the mountain in labor giving birth to a mouse.

MOUNTAIN, n. *mownt'in* or *-ān*, THE [F. *la montagne*, the mountain]: in *French hist.*, popular name for the most radical party of Jacobins in the French legislature; given first to the extreme revolutionists in the national assembly 1789–91, on its removal from Versailles to Paris, where it met in the riding-hall of the Louvre. See RIGHT (RIGHT AND LEFT): MONTAGNARDS: FRANCE, *Political Parties.*

MOUNTAIN BEAVER: see SEWELELL.

MOUNTAIN MEADOW MASSACRE: atrocious act by which more than 120 people, including many women and several children, lost their lives at Mountain Meadows, Utah, 1857, Sep. 15. The murdered persons belonged to an emigrant train, and had halted at Mountain Meadows to rest and feed their stock. A large party of savages, and some 60 white men disguised as Indians, fired upon them, killing several of their number. For five days the emigrants made a vigorous defense. The next morning a small party of whites led by John D. Lee (1813–77), a prominent elder of the Mormon Church, carrying a United States flag, appeared as representatives of the attacking force and proposed a treaty. It was agreed that the emigrants should surrender their arms and property and return East. They were then led, unarmed, by Lee and others, into an ambush, where all the surviving adults and several of the children were murdered. For this crime the Mormons were believed to be responsible, but it was many years before direct evidence of the fact was obtained. Lee was tried, convicted, and sentenced to death, and the sentence was executed 1877, March 23, by shooting, on the spot at which the massacre occurred.

MOUNT'AINS: term applied indefinitely to high hills —usually of at least 2,000 ft. elevation. M. have much influence in modifying climatic conditions. Yet the amount of solid material so raised above the ordinary level is not so much as might be expected. Remembering that elevated plateaus of great extent occur in several regions, and that the general surface of the earth is considerably higher than the sea-level, it has been estimated that were the whole dry land reduced to a uniform level, it would form a plain 1,800 ft. above sea-level. And were these solid materials scattered over the whole surface of the globe, so as to fill up the bed of the ocean, the resulting level would be considerably below the present surface of the sea, inasmuch as the mean height of the dry land probably does not exceed one-fifteenth of the mean depth of the bed of the ocean.

M., especially mountain-chains, subserve important uses in the economy of nature, notably in connection with the water system of the world. M. are at once the great collectors and distributors of water. In the passage of moisture-charged winds across them, the moisture is precipitated as rain or snow. When mountain-ranges intersect the course of constant winds by thus abstracting the moisture, they produce a moist country on the windward-side, and a comparatively dry one on the leeward. This is exemplified in the Andes, the precipitous w. surface of which has a different aspect from the sloping e. plains; so also the greater supply of moisture on the s. sides of the Himalayas brings the snow-line 5,000 ft. lower than on the n. side. Above a certain height the moisture falls as snow, and a range of snow-clad summits would form a more effectual separation between the plains on either side than would the widest ocean, were it not that transverse valleys are frequent, which open a pass, or way of transit, at a level below the snow-line. But even these would not prevent the range being an impassable barrier, if the temperate regions contained as lofty M. as the tropics. Mountain-ranges, however, decrease in height from the equator to the poles in relation to the snow-line.

The numerous attempts that have been made to generalize on the distribution of M. on the globe have hitherto been unsuccessful. In America, the M. take a general direction more or less parallel to the meridian, and for a distance of 8,280 m., from Patagonia to the Arctic Ocean, form a vast and precipitous range of lofty M., which follow the coast-line in S. America, and spread out somewhat in N. America, presenting everywhere a tendency to separate into two or more parallel ridges, and giving to the whole continent the character of a precipitous and lofty w. border, gradually lowering into an immense expanse of e. lowlands. In the old world, on the other hand, there is no single well-defined continuous chain connected with the coast-line. The principal ranges are grouped together in a Y-shaped form, the general direction of which is at right angles to the new

world chain. The centre of the system in the Himalayas is the highest land in the hemisphere. From this, one arm radiates n.e., and terminates in the high land at Behring Straits: the other two take a w. course; one a little to the n., through the Caucasus, Carpathians, and Alps, to the Pyrenees; the other more to the s., through the immense chain of Central African M., and terminating at Sierra Leone. Most of the principal secondary ranges have a general direction more or less at right angles to this great mountain tract.

The inquiry into the origin of M. has received much attention. Geologists have shown that the principal agents in altering the surface of the globe are denudation, which is always abrading and carrying to a lower level the exposed surfaces, and an internal force which is raising or depressing the existing strata, or bringing unstratified rocks to the surface. Whether the changes are the small and almost imperceptible alterations now taking place, or those recorded in the mighty mountains and deep valleys that are so numerous, denudation and internal force are the great producing causes. These give us two great classes of mountains.

1. *M. produced by denudation.*—The extent to which denudation has altered the surface of the globe can scarcely be imagined. All the stratified rocks are produced by its action; but these do not measure its full amount, for many of these beds have been deposited and denuded, not once or twice, but repeatedly, before reaching their present state. Masses of rock more indurated, or better defended from the wasting currents than those around, serve as indices of the extent of denudation. One of the most remarkable cases of this kind is that of the three insulated M. in Ross-shire, Scotland—Suil Veinn, Coul Beg, and Coul More—about 3,000 ft. high. The strata of the M. are horizontal, like the courses of masonry in a pyramid, and their deep red color is in striking contrast with the cold bluish hue of the gneiss which forms the plain, and on whose upturned edges the mountain-beds rest. It seems very probable, as Hugh Miller suggests, that when the formation of which these are relics (at one time considered as Old Red Sandstone, but now determined by Sir Roderick Murchison as being older than Silurian), was first raised above the waves, it covered, with an amazing thickness, the whole surface of the Highlands of Scotland, from Ben Lomond to the Maiden Paps of Caithness, but that subsequent denudation swept it all away, except in circumscribed districts, and in detached localities like these pyramidal hills.

2. *M. produced by internal force.*—These are of several kinds. (*a.*) M. of ejection, in which the internal force is confined to a point, so to speak, having the means of exhausting itself through an opening in the surface. The lava, scoriæ, and stones ejected at this opening form a conical projection which, at least on the surface, is composed of strata sloping away from the crater. Volcanoes are

mostly isolated conical hills, yet they occur chiefly in a somewhat tortuous linear series, on the mainland and islands which inclose the great Pacific Ocean. Vesuvius and the other European volcanoes are unconnected with this immense volcanic tract. (*b.*) But the internal force may be diffused under a large tract or zone, which, if it obtain no relief from an opening, will be elevated in the mass. When the upheaval occurs to any great extent, the strata, are subjected to great tension. If they can bear it, a soft rounded mountain-chain is the result; but generally one or more series of cracks are formed, and into them igneous rocks are pushed, which, rising up into mountain-chains, elevate the stratified rocks on their flanks, and perhaps as parallel ridges. Thus, the Andes consist of the stratified rocks of various ages, lying in order on the granite and porphyry of which the mass of the range is composed. The position of the strata on such M. supplies the means of determining, within definite limits, the period of upheaval. The newest strata that have been elevated on the sides of the mountain when it was formed, give a date antecedent to that at which the elevation took place, while the horizontal strata at the base of the mountain supply a date subsequent. Thus, the principal chain of the Alps was raised during the period between the deposition of the

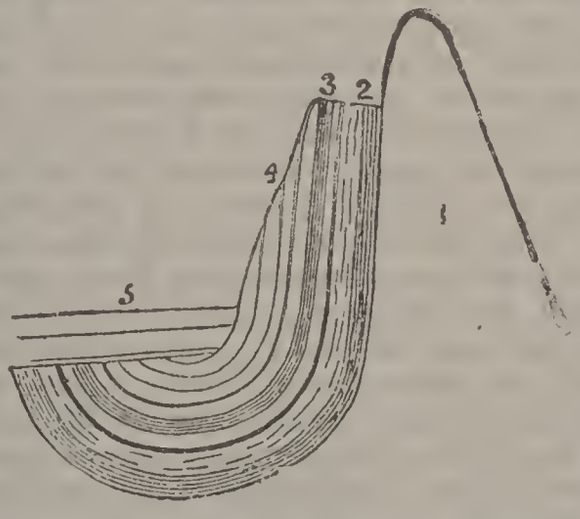


Fig. 1.—Principal System of the Alps:
1, Granitic rocks; 2, Palæozoic; 3, Secondary; 4, Tertiary; 5, Recent.

Tertiary and that of the older recent deposits. (*c.*) But there is yet another way in which the upheaving internal force operates, viz., where it acts not at right angles to the surface, but rather obliquely, and, as it were, pushes the solid strata forward, causing them to rise in huge folds, which, becoming permanent, form parallel ranges of M. The crust of the earth, in its present solid and brittle condition, is thus curved, in a greater or less degree, by the shock of every earthquake; it is well known that the trembling of the earth is produced by the progress of a wave of the solid crust; that the destruction of buildings is caused by the undulation; and that the wave has been so evident, that it has been described

as producing a sickening feeling on the observer, as if the land were but thin ice heaving over water. This mode of mountain formation is exemplified in the Appalachians (q.v.). Many other ranges have had similar

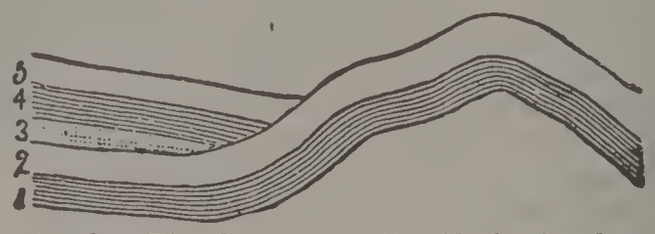


Fig. 2.—The System of the Netherlands:
1, Silurian; 2, Coal Measures; 3, New Red Sandstone; 4, Oolite; 5, Chalk.

origin, e.g., some in Belgium and in the Southern Highlands of Scotland.

It is evident that in the last two classes the parallel ridges were produced at the same time. Elie de Beaumont generalized this, maintaining that all parallel ridges or fissures are synchronous; and on this he based a system of mountain-structure, too universal and too geometrical to be true. The synchronism of parallel fissures had been noticed by Werner, and it is now received as a first principle in mining. The converse also is held to be generally true, that fissures differing in direction differ also in age; yet divergence from a centre, and consequent want of parallelism, as in the case of volcanoes, may be an essential characteristic of contemporaneity. Nevertheless, Elie de Beaumont classified the mountains of the world according to this parallelism, holding that the various groups are synchronous. The parallelism does not consist in having the same relations to the points of the compass—for these, as regards n. and s., would be far from parallel—but is estimated in its relation to some imaginary great circle, which being drawn round the globe would divide it into equal hemispheres. Such circles he called Great Circles of Reference. But he went a step further, and proposed a more refined classification, depending on a principle of geometrical symmetry, which he believed he had discovered among his great circles of reference. Professor T. J. J. See has recently developed a new theory of mountain formation, in which he shows that the strata of the earth are uplifted by injections of steam saturated lava from under the bed of the sea. This is why the mountains form so exactly parallel to the sea shore, as in case of the Andes; and when a mountain is burst open pumice is blown out, as seen in volcanoes, because all mountains are underlined with this material, which is simply molten rock inflated with steam. Earthquakes result when lava is expelled from under the bed of the sea. This uplifts the mountain parallel to the sea shore, but the expulsion of so much lava from under the sea undermines the sea bottom, and at intervals it sinks down, and gives rise to the

great sea waves which so frequently accompany violent earthquakes. Professor See shows that volcanoes depend entirely on steam, forming beneath the earth's crust, while earthquakes and mountain formation depend on the same cause, and not at all on the shrinkage of the globe, as geologists have usually claimed. See article EARTHQUAKES for greater details of this important theory, which explains all the principal phenomena of the earth's crust by a single principle.

MOUNT CAR'MEL: Ill., city, county-seat of Wabash county; on the Wabash river, and on the Cleveland, C. C. & S. L. railroad; about 145 miles southeast of Springfield. The place was settled in 1818 and in 1868 was chartered. It is in an agricultural section; but good water-power has contributed toward making it a manufacturing city. The chief manufactures are flour, paper, lumber, furniture, lumber products, strawboard, machinery supplies, shafting, pulleys, and dairy products. It has the railroad shops of the 'Big Four' railroad. There is considerable trade in manufactured articles, farm products, and live-stock. Pop. (1910) 6,934.

MOUNT CARMEL: Pa., borough in Northumberland county; on the Northern C., the Philadelphia & R., and the Lehigh V. railroads; about 45 miles north by east from Harrisburg. It is in the midst of valuable coal fields, and nearby are large anthracite mines. The manufactures are mining implements, miners' lamps, hats, caps, men's clothing, flour, and cigars. The borough has an extensive trade in lumber and coal. Pop. (1910) 17,532.

MOUNT CLEMENS: Mich., city, county-seat of Macomb county; on the Clinton river, and on the Grand Trunk railroad; about 22 miles northeast of Detroit. Electric railroad lines connect the city with Detroit and the towns along the coast. The first settlement was made in 1802; and the original plan of the village was made in 1818 by Christian Clemens. In 1865, a company prospecting for oil sank a well at Mount Clemens. After going to a depth of about 1,300 feet they abandoned all hope of oil, but found salt instead. Soon a new company was formed for the purpose of manufacturing salt, but the enterprise did not prove a success because of the quality of the salt. In 1868, apparently by accident, the discovery was made that the water from the salt wells possessed remarkable medicinal properties and since then the place has had a steady growth, increasing yearly. The churches and schools compare favorably with others in the state. Mount Clemens has considerable manufacturing and commercial interests. Some of the manufacturing establishments of the city are a carriage and wagon factory, beet-sugar factory, machine-shops, and cooperage works. The government of the city is administered under the law of the state for the cities of the fourth class. Pop. (1900) 6,576; (1910) 7,707.

MOUNT DESERT, *dē-zėrt'* or *dĕz'ėrt:* island in the Atlantic Ocean, 30 m. s.e. of Bangor, Me., and belonging to Hancock co. of that state; about 14 m. long by 7 m. wide, and its southern portion is penetrated for several miles by Soames Sound. It is divided into three towns, Eden, Tremont, and Mount Desert, included in which are several villages. There are seven ridges of hills with a number of mountain peaks, of which the highest, Green Mountain, reaches an elevation of 1,535 ft. Among these mountains are a number of beautiful lakes, some of which are of considerable size. Until a recent period the principal interests of the island were shipbuilding, the manufacture of lumber, and fisheries; but of late it has come into prominence as a fashionable summer resort. The scenery possesses all the attraction of both sea-shore and mountains; and from the higher peaks magnificent views of a picturesque region are obtained. The island is only one m. from the mainland and has three good harbors, known as Bar Harbor, Northeast, and Southwest. On the e., in Frenchman's Bay, are five small islands known as the Porcupines, while the s.e. coast rises into enormous cliffs. The island was discovered 1605 by Champlain, who, forming his opinion of it from Bald Mountain, named it *Mont Désert.* Under the name of St. Sauveur a settlement was effected 1613 by some French colonists; but it was soon afterward broken up by Gov. Argall's expedition from Va. In 1761, Abraham Soames erected the first house of the permanent settlement, near the centre of the island. There are now several churches, a large number of schools, about a dozen post-offices, and about 50 hotels, some of great size. Bar Harbor is the largest centre of population, and the most prominent and popular of the resorts on Mt. D. island; though there are several other choice and beautiful localities rapidly gaining favor. Many costly and beautiful residences have recently been erected, and there are hundreds of cottages belonging to visitors from the larger cities—as distant as Chicago and New Orleans—who here spend the summer months. Pop. resident (1890) 8,195; (1900) 7,907.

MOUNTEBANK, n. *mownt'ĕ-băngk* [It. *montare*, to mount, and *banco*, a bench; mid. L. *montare in banco*, to play the mountebank]: a quack-doctor who mounts a bench or stage in a public place, and there boasts of his skill in curing diseases; any boastful or false pretender.

MOUNT HOLLY, *hŏl'ĭ:* town, cap. of Burlington co., N.J.; on branch lines of the Penn. railroad; 18 m. n.e. of Philadelphia. The streets are lighted by gas, and the town is well supplied with water. It has several churches, good schools, newspapers, the various county buildings, lumber mills, machine shops and iron foundries. Pop 4,900.

MOUNT HOLYOKE, *hōl'yōk,* COLLEGE: at S. Hadley, Mass.; founded by Mary Lyon (q.v.); chartered 1836; opened 1837. The founder had had a large experience in educational work; was principal of the seminary from its opening till her death 1849; instructed more than 3,000 pupils; and combined training in domestic labor with an

advanced curriculum. Prior to 1836 but two schools for girls exclusively had been chartered in Mass., Ipswich Acad. 1828, and Abbott Acad. 1829; but Mary Lyon's seminary was the first legally authorized to hold endowment funds, and designed to furnish young women a thorough and complete collegiate education. For fifty years the voluntary gifts were expended on the buildings, the running expenses being met by charges for board and tuition. In 1885 the national assoc. of Holyoke alumnæ resolved to raise an endowment fund of $20,000, for the chair of the principal, and at the semicentennial of the seminary, 1887, June 22-3, this fund, named after the founder, amounted to $28,150, and it has been increased largely since. The original name of the institution was Mount Holyoke Seminary. By act of the legislature 1888, Mar. 8, the name was changed to Mount Holyoke Seminary and College, and it was authorized to confer 'such honors, degrees, and diplomas as are granted or conferred by any university, college, or seminary of learning in the commonwealth.' In 1893 another change was made in the name. The word seminary was dropped, and the legal title became Mount Holyoke College. Formerly three degrees were conferred by the college, but A. B. is now the only degree given, though provision is also made for graduate work leading to the degree of A. M. and for special work for school teachers. The course is arranged in two years of required and two years of elective work; the curriculum beside the regular classical, scientific and literary courses includes music and art, biblical history and literature, pedagogy, etc. Full attention is given to physical training; regular gymnasium work is required for the first three years of the course, and there is provision for polo, basket ball, tennis and golf. A feature of the founder's plan, which is still carried on to some extent, was that the domestic housework should be done by the students, and now the lighter part of it is done entirely by the students as are also part of the clerical work and some laboratory work. Entrance to the college is by examination or certificate from approved schools, and graduates are entitled to fellowships in the American School of Classified Studies at Athens and a similar one at Rome; to the advantages of the Zoological Station at Naples and the Marine Biological Station at Wood's Hall, Mass. The main buildings are the Mary Lyon Hall, occupying the site of the original building which was destroyed by fire in 1896; the Dwight Memorial Art Building; Lydia Shattuck Hall for physics and chemistry; the Lyman Winston Hall for other sciences, the gymnasium, observatory, residence halls, and library, which contains over 35,000 volumes. There are also plant houses and botanical gardens and the campus includes about 150 acres. In 1905 the professors and instructors numbered 68 and the students 709.

MOUNTMELLICK, *mownt-mĕl'ĭk:* market-town and seat of poor-law union, Queen's county, province of Leinster, Ireland; on the river Owenass, a branch of the Barrow, 47 m. w.s.w. from Dublin. The town has long been a chief seat of the Society of Friends, who established a manufactory of coarse woolen friezes and tweeds, by which many poor children are employed.

MOUNT PLEASANT: city, cap. of Henry co., Io.; on the Chicago, Burlington and Quincy and the St. Louis, Keokuk and Northwestern railroads; about 120 m. e. by s. of Des Moines and about 28 m. w. of the Mississippi river. It is on a high plateau; surrounded on three sides by Big Creek, an affluent of the Skunk river; and is the centre of trade for a large agricultural region, in which considerable attention is given to raising horses and live-stock. In the vicinity are large limestone quarries, and the chief industrial establishments are flour and lumber mills, machine shops, brick yards, wagon and carriage factories, potteries, etc. There is considerable trade in grain, limestone, horses and live-stock. The city contains several churches, banks, a conservatory of music, high school, public and parish schools, a Carnegie library, the Iowa Wesleyan University (M. E.), the German Theological College (M. E.), Hone's Academy, and the State Hospital for the Insane. M. P. was settled in 1834, was incorporated in 1838 and chartered as a city in 1851. On 1882, June 17, the city was visited by a cyclone which caused the loss of several lives and the destruction of property valued at $150,000. The city government is composed of a mayor and council of 8 members elected for two years. The electric-light plant and waterworks are owned and operated by the municipality. Pop. (est.) 4,200.

MOUNT ST. ELIAS, *ē-lī'as:* volcanic mountain in Alaska, on the boundary line of British Columbia, and near the Pacific Ocean; lat. 60° 18′ n., long. 140° 30′ w. Its top is constantly covered with snow. It is the highest point in N. America, according to recent measurements, 19,500 ft. above sea-level.

MOUNT VERNON, *vĕr'non:* city in Eastchester tp., Westchester co., N. Y.; on the Bronx river, about midway between Long Island Sound on the e. and the Hudson river on the w., and on the New York, New Haven and Hartford, and the Harlem division of the New York Central and Hudson River railroads, about 15 m. n.n.e. of New York City Hall. It adjoins New York on the n., and is the home of a large number of merchants and others doing business in the city. It is being rapidly built up, and has become a very desirable place of residence. The number of inhabitants has about doubled in the past six years, while the value of real estate outside the closely built portion is said to have quadrupled in that time. M. V. Has electric

street railways. Among the fine buildings are the Young Men's Christian Assoc. hall, which cost $40,000; a Methodist Episc. church costing about $50,000; and a Presb. church in process of erection at a cost of $60,000, and library and hospital buildings. Other religious denominations are well supplied with church buildings; there are large public schools; daily and weekly newspapers and several banks. There is considerable manufacturing, including carriages, horn and rubber jewelry, glue and pens. The question of obtaining a city charter was agitated for several years, and the legis. granted a charter in 1892. The government is vested in a mayor, who holds office for two years, and a council. The mayor appoints, subject to the approval of the council, all the administrative officials except the board of education, comptroller, assessors, and receiver of taxes, who are elected by the people. Pop. (1900) 20,346; (1910) 30,919.

MOUNT VER'NON: city, cap. of Knox co., O.; on the Vernon river, at the junction of the Cleveland, Mount Vernon and Delaware, and a division of the Baltimore and Ohio railroads; 45 m. n.e. of Columbus. It was organized as a town 1805, has a large number of churches and schools, a fine court-house, banks, newspapers, and many beautiful residences. The streets are lighted with gas, and the town has an extensive trade. Abundant water power is supplied by the river, and there are extensive manufactures of wagons, engines and locomotives, carriages, twine, linseed oil, and flour; with saw mills and machine shops, etc. Kenyon College is about six m. distant. The city includes the suburbs of Chester Hill, the former village of M. V. and a part of the town of Eastchester. The city owns and operates the waterworks. Pop. (1910) 9,087.

MOUNT VER'NON: estate of George Washington in Fairfax co., Va.; on the w. bank of the Potomac river, 15 m. below Washington, 9 m. from Alexandria. The mansion was erected 1743 by Lawrence Washington, elder brother of the president, by whom it was inherited and greatly improved. It is on a hill, fronted with a beautiful lawn and commanding a fine and extensive view of the Potomac. The house is 96 ft. long, two stories high, and has a piazza with columns along the front. It was the home of Washington from his boyhood until his death. He was buried in the family vault s. of the mansion; but, 1830, the remains were placed in a new vault built near a ravine a few hundred yards from the house. At the death of the president, M. V. came into the possession of Bushrod Washington, who left it at his death to a nephew, John A. Washington. The latter sold 1858 the mansion and 200 acres of land for $200,000 to the Ladies M. V. Assoc. to be kept forever as a place of public and patriotic interest. In case of failure of the assoc. to fulfil the conditions imposed by

the contract the mansion will become the property of the state of Virginia. The mansion contains many articles of historic interest, and some of the rooms have been kept as they appeared at the time of Washington's death; but a large part of his books are now in the Boston Athenæum. M. V. is in a township of the same name. Pop. magisterial dist. (1890) 2,673; (1900) 3,033.

MOURN, v. *mōrn* [Goth. *maurnan;* Icel. *morna*, to be troubled about, to mourn: OHG. *mornen*, to grieve: F. *morne*, dull, downcast]: to grieve for; to lament; to grieve; to be sorrowful; to wear the garb of sorrow. MOURN'ING, imp.: ADJ. employed to express sorrow or grief; worn, as appropriate to the condition of one mourning: N. the act of sorrowing or expressing grief; lamentation; garb assumed on the death of a relative or friend (see below). MOURNED, pp. *mōrnd*. MOURNER, n. *mōrn'ėr*, one who is grieved at any loss or misfortune; one who attends a funeral in the habit of mourning. MOURN'INGLY, ad. *-lĭ*, with the appearance of sorrowing. MOURN'FUL, a. *-fûl*, expressive of grief; having the appearance of sorrow; causing sorrow; sorrowful; doleful; sad. MOURN'FULLY, ad. *-lĭ*, in a mourning manner. MOURN'FULNESS, n. *-nĕs*, the state of being mournful; the show or expression of grief. MOURNING-COACH, a dark-colored carriage with black horses and trappings for the accommodation of mourners attending a funeral. MOURNING RIGHT, a broad metal bordering for mourning columns or paragraphs in newspapers.—SYN. of 'mourn': to deplore; bewail; bemoan; sorrow;—of 'mournful': lugubrious; heavy; grievous; calamitous; afflictive; gloomy; dejected; moody; melancholy.

MOURNE MOUNT'AINS: see DOWN, COUNTY OF.

MOURN'ING: particular habit worn to express grief, especially for the decease of kindred or friends. The usages regarding M. have varied much at different times and in different countries. Among the Jews, the duration of M. for the dead was generally 7 days, sometimes protracted to 30 days; and the external indications of sorrow consisted in weeping, tearing the clothes, smiting the breast, cutting off the hair and beard, lying on the ground, walking barefoot, and abstaining from washing and anointing the person. Among the Greeks the period was 30 days, except in Sparta, where it was limited to 10. The relatives of the deceased secluded themselves from the public eye, wore a coarse black dress, and in ancient times cut off their hair as a sign of grief. Among the Romans the color of M. for both sexes was black or dark-blue under the republic. Under the empire, the women wore white, black continuing to be the color for men, who did not cut off the hair or beard as in Greece. Men wore their M. only a few days; women a year, when for a husband or parent. The time was often shortened by a victory or other happy public event, the birth of a child, or the occurrence of a family festival. Public calamity, such as a defeat, or the death of an emperor or person of

note, occasioned a public M. which involved a total cessation of business, called Justitium. In modern Europe and in the United States the ordinary color for M. is black; in Turkey, violet; in China, white; in Egypt, yellow; in Ethiopia, brown. It was white in Spain until 1498. M. is worn of different depth or degree, and for different periods of time, according to the nearness of relationship of the deceased. On the death of a sovereign or member of the reigning house, a court M. is ordered; and often a general mourning.

MOUSA, *mō'sâ:* island of Shetland, remarkable for an object of antiquity styled Burgh-Mousa, which consists of a round tower of the class known in n. Scotland as Pictish towers Burgh-Mousa occupies a knoll close by the rocky sea-beach, from which materials for its construction had been taken. The whole fabric is of flat slabs of clay-slate, which have been easily piled together in a compact mass without mortar. In exterior figure, the tower is round, inclining inward about half-way up, and then bulging out near the top. Near the foundation, its circumference is 158 ft., and it is about 40 ft. in height. On the side next the sea there is a doorway, the only exterior aperture. If there were ever any doorposts, they have disappeared; it is conjectured, however, that, instead of employing a door, the inmates had, on emergencies, built up the opening, for which there is abundance of loose materials at hand. Entering the doorway, we find the wall 16 ft. thick, and looking upward, feel as if we were at the bottom of a well, for the circular interior has no flooring, and the top is open to the sky. Opposite the doorway, is an entrance to a passage and stair which wind upward within the thickness of the wall, to the summit of the building. At different places there are recesses, or galleries, leading off from the stair, lighted by apertures to the interior; such dismal holes being all that we find in the way of apartments. It is customary to speak of an outer and inner wall; but the two walls, if we so distinguish them, are so firmly bound together by the stair and otherwise, as to afford a united resistance to assault. Obviously, the structure was used as a retreat in case of attack from foreign enemies, against whom missiles could be showered down from the species of battlement formed by the top of the well-knit walls. According to tradition, the tower of M. was occupied by Erland, a Norwegian Jarl, about 1154, when it successfully endured a siege undertaken to recover a runaway lady; but how any lady could have found accommodation in such miserable quarters, it is difficult to conjecture. The Soc. of Scottish Antiquaries has repaired this fine memorial of a former state of society in Shetland. From its comparatively complete state, Burgh-Mousa is considered a good specimen of the Pictish towers, so called

MOUSE, n. *mows* [Ger. *maus;* Dut. *muis;* Icel. *mús;* Dan. *muus*, a mouse: Gr. and L. *mus*, a mouse]: active and mischievous little rodent that infests houses, granaries, etc., or lives in fields: V. *mowz*, to watch for and catch mice, as a cat. MOUS'ING, imp.: ADJ. catching mice; in *OE.*, stealthy; sneaking; cat-like. MOUSED, pp. *mowzd.* MOUSY, a. *mowz'ĭ*, abounding in mice. MOUSER, n. *mowz'ẽr*, a cat that is a good catcher of mice. MOUSE-BUTTOCK, a term applied to certain parts of beef. MOUSE-EAR, a plant so called from the shape and velvety surface of the leaves; the *Hiera'cĭŭm pilosel'la*, ord. *Compositæ.* MOUSE-HAWK, a bird that feeds on mice. MOUSE-HOLE, the nest or den of a mouse. MOUSE-TAIL, a small wild plant with little green flowers; the *Myosūrus cristātus*, ord. *Ranunculācĕæ.* MOUSE-TRAP, a contrivance for catching mice. MICE, n. plu. *mīs* [AS. *mys;* Icel. *myss*, mice]: more than one mouse.

MOUSE (*Mus*): genus of rodent mammalia of family *Muridæ* (q.v.), having three simple molar teeth in each jaw, with tuberculated summits, the upper incisors wedge-shaped, the lower compressed and pointed, the fore-feet with four toes and a rudimentary thumb, the hind-feet five-toed; the tail long, nearly destitute of hair, and scaly. This genus includes rats (q.v.) and mice; the smaller species bearing the latter name. The original habitat was probably India, whence these animals have followed man in his migrations to all parts of the inhabited world. The various American genera differ but slightly from the European: they are classed usually as Sigmodontes.—The COMMON M. (*Musculus*), abundant everywhere, has great fecundity; as most of its congeners have: Aristotle made the experiment of placing a pregnant female M. in a closed vessel filled with grain, and found in a short time no fewer than 120 mice in the vessel. There are several varieties of this species. That generally found in houses is smaller, and not so dark in color, as that common in barns and farm-yards. A white variety sometimes occurs, and has been perpetuated in a half-domesticated state. The common brown kind is, however, at least as easily tamed, and readily becomes familiar enough. A pied variety is frequent in India.—Much has been written about the singing powers of the M.; it being asserted, on the one hand, that mice frequently show love for music, and a power of imitating the song of birds; while, on the other hand, it is alleged that the singing of mice is merely the consequence of throat disease.—The M. makes a nest like that of a bird in the wainscot of a wall, among the chaff or feathers of a bed, or in any similar situation. The litter is generally from six to ten in number.—The WOOD M., or LONG-TAILED FIELD M. (*M. sylvaticus*), is a little larger than the Common Mouse. Its tail is longer, its ears also longer; its muzzle is rather longer; its underparts are lighter in color, than in the common mouse. It is a grievous pest in gardens and fields. It lays up stores of grain and other food, either in thick tufts

grass, or just under the surface of the earth. The quantity of food laid up in such stores is often wonderfully large. The Field M. is timid, gentle, and easily tamed. —One of the smallest of quadrupeds is the HARVEST M. (*M. messorius*), whose head and body are only 2½ inches in length, the tail being almost equally long, and to some degree prehensile; the general form elongated and slender, the head narrow, the ears not large. It

1, Harvest Mouse (*Mus messorius*); 2, Long-tailed Field Mouse (*Mus sylvaticus*).

makes its nest among the stalks of wheat, reeds, or other grasses, weaving together the leaves and panicles of grasses, the leaves being for this purpose cut into shreds by its teeth. The nest is a very curious structure formed by mere intertwining, without cement of any kind. It is generally suspended among the stalks. It is globular, or nearly so, and entrance to it is through an opening, which almost completely closes up again.—A still smaller species of M. (*M. pumilus*) is found in S. Europe.—An American species, the WHITE-FOOTED M. (*M. leucopus*), common in most parts of N. America, and intermediate in its habits between the Common M. and the Field M. is said to depart from houses whenever either the cat or the brown rat appears in them.—The Barbary M. (*M. Barbarus*) approaches in size to the rats, and is distinguished by its longitudinally striped fur.

The name M. is often popularly given to animals considerably different from the true mice, as the *Voles* (q.v.)

MOUSE'-EAR CHICK'WEED (*Cerastium*): genus of plants of nat. ord. *Caryophyllaceæ*, having five sepals, five bifid petals, ten stamens, five styles, and a capsule bursting at the top with ten teeth. The species are numerous, natives of temperate and cold countries in all parts of the world. Some are among common weeds; others, having larger flowers, are occasionally planted in flower-borders and on rock-works. The form and hairiness of the leaves of some of the British species have given rise to the popular name.

MOUSSELINE'. See MUSLIN.

MOUSSELINE-DE-LAINE, n. *mûs-lēn'dĕ-lān'* [F. muslin of wool]: a woolen fabric of very light texture, used for ladies' dresses—so named as originally made at *Mossoul*.

MOUSTACHE, n. *mûs-tâsh'* [F. *moustache*—from It. *mostaccio* or *mostazzo*, snout, face: mod. Gr. *mustax*, mustaches; *mustaki*, whiskers: Gr. *mustax*, the upper lip; *mastax*, the mouth]: hair worn over the upper lip by men; usually in the plu. MOUSTACH'ES, *-tâsh'ĕz:* also spelt MUSTACHE.

MOUTH, n. *mowth*, MOUTHS, n. plu. *mowthz* [Goth. *munths;* Icel. *munnr;* Ger. *mund;* Swiss, *munzen;* L. *mandĕrĕ*, to chew]: the opening in the hĕad of an animal by which food is received, and containing the organs of mastication, of taste and of voice; the instr. of speech; cry; voice; any opening or channel by which a thing is received or discharged, as of a vessel, a well, or a cannon; an entrance; the part of a river or creek where its waters join those of a sea or other large body of water: V. *mowth*, to utter with an affected swelling voice; to rant; to utter a word fully and roundly; to vociferate; to seize in the mouth; to attack with reproachful language. MOUTH'ING, imp. *-ĭng:* ADJ. uttering with an affected swelling mouth: N. an affected swelling manner of speaking. MOUTHED, pp. *mowthd*. MOUTHER, n. *mowth'ĕr*, an affected speaker. MOUTHLESS, a. *mowth'lĕs*, without a mouth. MOUTH'FUL, n. *-fûl*, as much as the mouth can contain; a small quantity. MOUTH-HONOR, outward civility; compliments that are insincere. MOUTH'-PIECE, n. in a wind-instrument of music, the piece for the mouth; one who utters opinions on behalf of others; a spokesman. TO MAKE MOUTHS, *mowths*, to make grimaces or wry faces. DOWN IN THE MOUTH, mortified; chopfallen. TO STOP THE MOUTH, to silence or confound.

MOUTH, DISEASES OF THE: diseases occurring in various forms, but usually beginning with inflammation of the mucous membrane. The inflammation may be equally diffused, or may be confined chiefly or entirely to the mucous follicles. When diffused, it may either present no peculiar secreted product, or the surface may be covered with a curd-like secretion, or with patches of false membrane. It may further be attended with eruption, ulcera-

tion, or gangrene, any one of which may impress a special character on the disease, or it may present peculiarities from the nature of its exciting cause, as when it accompanies scurvy, or is the result of mercurial action.

The following are principal forms of inflammation of the mouth, or *stomatitis* (Gr. *stoma*, the mouth), as it is termed: 1. *Common Diffuse Inflammation*, which appears in reddened, somewhat elevated, patches, and sometimes occupies large portions of the surface of the mouth. It is more commonly a complication of other diseases than an original affection. When of the latter character, it is generally caused by the direct action of irritants, as by scalding drinks, corrosive substances introduced into the mouth, accumulated tartar on the necks of the teeth, etc. In ordinary cases, cooling and demulcent liquids (such as cream of almond oil) or solution of chlorate of potassium applied locally, an occasional saline cathartic, with a soft and chiefly farinaceous diet, constitute the necessary treatment.

2. *Diffuse Inflammation, with curd-like exudation*, is almost entirely confined to infants: see THRUSH, its popular name.

3. *Inflammation of the Follicles*, and *Eruption or Vesicular Inflammation:* see APHTHÆ.

4. In *Ulcerative Inflammation*, or *Canker*, an ulceration, often of considerable size, with grayish surface and an inflamed edge, appears on the gums, or inside of the cheeks or lips. The swelling of the adjacent parts is often so considerable as to be apparent externally. There is a copious flow of saliva, and the breath is very offensive. The disease generally occurs in children from 2 to 6 years of age. The ulcer may continue for an indefinite period, but always yields to treatment. The febrile symptoms and the constipation usually present must be combated in the ordinary way. Perhaps the best general treatment is the administration of chlorate of potassium, and washing the mouth with a solution of chlorinated soda.

5. The ulceration above noted is sometimes the first stage of a much more serious affection—*Gangrene of the Mouth*, or *Cancrum Oris*, or *Noma*, which usually occurs in children between the first and second dentition. A sloughing ulcer forms upon the gums, or some other part of the mouth. This slough spreads, the breath becomes extremely fetid, the disease extends to the alveolar processes, and the teeth are loosened and fall out. Inability to take food is followed by exhausting diarrhœa, and death is the usual termination.

For other affections of the mouth, see SALIVATION: SCURVY.

The treatment consists in excision of the gangrenous portion, when possible, followed by cauterization of the edges. Prevention of the disease is effected by careful cleansing of the mouth at all times, but especially dur-

ing the course of any contagious disease, and in prompt treatment of any inflammation or ulcers of the mouth.

MOVE, v. *môv* [L. *movērĕ*, to move or stir: It. *movere*, to move: F. *mouver*, to stir the mold in a garden; *mouvoir*, to move, to stir]: to carry or convey from one place to another; to pass from one place to another; to walk; to change the posture of the body or the position of a part; to put into motion; to arouse; to provoke; to affect; to agitate; to prevail on; to persuade; to touch pathetically; to walk or march; to change a residence; to propose or bring forward for consideration or acceptance; to have vital action—as, 'in Him we live, and *move*, and have our being'; in *OE.*, to make angry: N. the act of transferring from one place or spot to another, as in chess or draughts; a movement; in *familiar language*, a scheme; an artifice; a certain amount of work, or fixed time, forming the unit in reckoning the wages of a glassmaker. MOVING, imp.: ADJ. changing place; having motion; impelling; persuading; stirring the passions or affections; touching; fitted to excite the passions or affections. MOVINGS, n. plu. *môv'ĭngz*, motives; impulse. MOVED, pp. *môvd*. MOVER, n. *-ẽr*, one who or that which moves; a proposer. MOVE'LESS, a. *-lĕs*, not to be put out of place. MOVEMENT, n. *môv'mĕnt*, the act or manner of moving; a passing; any change of position; motion; excitement; any single part in a musical composition; the wheelwork of a watch; an agitation or proceeding undertaken to accomplish certain purposes, or to effect desired changes, as in political or ecclesiastical affairs, or in matters affecting social life. MOV'INGLY, ad. *-lĭ*, in a moving manner; pathetically; in a manner to excite or affect the passions. MOV'INGNESS, n. *-nĕs*, power to affect the passions. MOVING-POWER, an agent used to impart motion to machinery, as water, steam, wind, etc. MOVING or MOTIVE FORCE, in *mech.*, the cause of the change of velocity in the motion of a body; a force equal to the product of the mass of a body into the accelerating force. MOV'ABLE, a. *-ă-bl*, that may be moved or carried from one place to another; susceptible of motion; shifting from one time to another; portable. MOV'ABLY, ad. *-blĭ*. MOV'ABLENESS, n. *-bl-nĕs*, the state or quality of being movable; susceptibility of motion. MOV'ABLES, n. plu. *-ă-blz*, any kind of property which can be carried about, as distinguished from houses or lands; goods; furniture: in Scotch *law*, personal as distinguished from heritable property—movables in intestacy passing to the next of kin (see KIN) while heritage passes to the heir-at-law. Besides corporal things, movables include debts, rights of action, etc. MOVABLE FEASTS, certain church festivals reckoned from Easter, the Lord's Day first after the full moon which happens on or next after Mar. 21 (see FESTIVALS: EASTER).—SYN. of 'move, v.': to incite; stir; propose; recommend; touch; trouble; influence; actuate; impel; instigate; prompt; induce; incline; offer.

MOVEMENT CURE.

MOVE'MENT CURE: system for preserving health and curing disease by exercise carefully adapted to the special requirements of the case. It was devised by Peter Henrik Ling (1776—1839) of Sweden, and for a long time was popularly known as the Swedish movement cure. The method is founded on the well-known principle that the exercise of any set of muscles will, if properly directed, increase their strength. It differs from ordinary gymnastics, and the common forms of exercise and recreation, in bringing into use the particular muscles which may need exercise and development, while the remaining portions of the body are allowed to rest, or are used to only a slight extent. It is adapted specially to those whose daily occupations actively employ only a portion of the muscular system, leaving many groups of muscles so slightly used that the waste matter is not promptly or thoroughly eliminated. In the unused muscles the processes of repair are retarded, the nerves which enter them are irritated and in time the muscular weakness inseparable from want of exercise is followed by a greater or less degree of disturbance of the nervous system. Ordinary exercise is likely to tend toward the development of the muscles which are already strong, rather than of those which are weak. There is danger also of carrying exercise in the gymnasium or elsewhere to an extent harmful rather than beneficial. In the movement cure the degree as well as the kind of exercise is carefully regulated to meet the requirements of the individual. Periods of exercise are followed by intervals of rest. In the one the blood is brought to the weakened part, while during the other the nutritive forces are allowed to carry on the processes of repair. This tends to strengthen the muscles which are weak without exerting them too severely, and gradually to bring them up to their proper tone. An effort has been made so to arrange the various movements that they shall be diverting, and thus combine recreation with the exercise. A large number of the movements can be performed without an apparatus and with but slight inconvenience. The abdominal and pectoral muscles are exercised and strengthened by repeatedly raising the head while lying on the back, and many sets of muscles are easily brought into use while standing or sitting. For acute diseases the movement cure is, of course, not adapted; and there are many physical ills of less aggravated form which need treatment along other lines. But there remain various forms of weakness and disease, and numerous deformities, which are greatly benefited by a judicious use of the movement cure. The inventor of the system was highly honored in his own country, the Swedish government founding, 1814, an institution for its practice, and it has been adopted in many private hospitals. In other countries the method has, with some modifications, come into use to a considerable extent.

MOV'ING PLANT (*Desmodium gyrans*): plant of natural order *Leguminosæ*, sub-order *Papilionaceæ*, native of India, remarkable, as are some other species of the same genus, for the spontaneous motion of the leaves. The leaves are ternate, the lateral leaflets much smaller than the terminal one. These lateral leaflets are in constant motion, being elevated by a succession of little jerks till they meet above the terminal leaflet, and then moving downward by similar rapid jerks to the leaf-stalk. Sometimes one leaflet is in motion and the other at rest. Sometimes a few may be seen moving, while there is a partial cessation in the other leaves of the plant. A high wind causes this cessation more than anything else; the movements are more languid in a very hot dry day, and are seen in their perfection in warm moist weather. The terminal leaflet does not remain absolutely at rest, though its movements are not like those of the lateral ones, but it oscillates slowly from one side to the other. The remarkable movements of this plant are fully discussed and illustrated in Darwin's interesting work, *The Power of Movement in Plants* (1880).

MOW, v. *mō* [AS. *mawan:* Dut. *maeden;* Ger. *mähen;* OHG. *májan*, to mow (see MEADOW)]: to cut the grass from, as a field; to destroy sweepingly or in great numbers; to cut and make grass into hay. MOW'ING, imp.: N. act of cutting down with a scythe. MOWED, pp. *mōd*, or MOWN, pp. *mōn*. MOW'ER, n. *-ėr*, one who mows. MOWING AND REAPING MACHINES: see REAPING.

MOW, n. *mow* or *mō* [AS. *mucg* or *mowe*, a heap, a stack: Icel. *mugr*, a mow of hay; *muga*, a heap of hay; *muga*, to gather into heaps]: a pile of hay or sheaves of grain stored in a barn or under cover; the place where corn or hay is stored: V. to pile up or store hay, etc., under cover. MOW'ING, imp. MOWED, pp. *mōd* or *mowd*. MOW-BURNT, applied to hay that has heated by being heaped together in a damp state.

MOW, n. *mô* or *mow* [F. *moue*, a wry face: O. Dut. *mouwe*, the protruded under lip]: in *OE.* and *Scot.*, a mouth; a wry mouth: V. to make mouths or grimaces. MOW'ING, imp. MOWED, pp. *môd* or *mowd*.

MOWAT, *mō'ăt*, Sir OLIVER: Canadian statesman: b. Kingston, Ontario, 1820, July 22; d. 1903. He was educated in Kingston and in Toronto and was admitted to the bar in 1841, when he established a law practice in Toronto, and in 1856 was appointed queen's counsel. He served in the Canada assembly in 1857-64 and in 1858 was provincial secretary. In 1863-4 he was postmaster-general and in the latter year became vice-chancellor of Ontario. He was appointed premier in 1872 and was also attorney-general until 1896, when he became minister of justice and president of the senate. He was made lieutenant governor of Ontario in 1897. He was knighted in 1892.

MOWBRAY, *mō'brā*, GEORGE W.: American inventor: b. Lewes, England, 1815; d. North Adams, Mass., 1891, June 21. He studied chemistry in England, came to America in 1853, worked in the California gold mines until 1858, in the Pennsylvania oil country until 1868, and then at North Adams, where he perfected the commercial use of nitroglycerine, and invented smokeless powder. He was consulting chemist to the Maxim & Nordenfeldt Arms Company.

MOWBRAY, HENRY SIDDONS: American artist: b. Alexandria, Egypt, 1858. He was brought to the United States in early childhood and educated in North Adams, Mass. He studied one year at West Point. In 1878 he entered the studio of Bonnat, Paris, and subsequently settled in New York as a figure painter and decorator. He is a member of the Society of American Artists, a National Academician, and in 1903 was director of the American Academy in Rome. He was awarded the Clark prize by the National Academy in 1888.

MOWBRAY, J. P.: a pseudonym of Andrew Carpenter Wheeler. See WHEELER, A. C.

MOWER, *mow'ėr*, JOSEPH ANTHONY: 1827, Aug. 22—1870, Jan. 6; b. Woodstock, Vt. After obtaining a common school education he learned the trade of carpenter. He entered the army during the war with Mexico, and was promoted at various times, till, 1861, he reached the rank of captain. He was wounded and captured by the Confederates at the battle of Corinth, Miss. He was chosen colonel 1862 of a Missouri regiment, and was promoted brigadier-general of volunteers before the close of the year. He rendered excellent service at the attack on Vicksburg, and with General Sherman in his march to the sea. He was promoted major-general 1864. At the time of his death he was in command of the department of Louisiana. General Sherman said of him, that 'a better soldier or a braver man never lived.' He died at New Orleans.

MOWRY, *mō'rĭ*, WILLIAM AUGUSTUS, A.M., LL.D.: American educator and author: b. Uxbridge, Mass., 1839, Aug. 13. He was educated at Brown University and in 1862-3 was a captain in the Federal army. He was principal of the English and classical school in Providence in 1864-84 and in 1884-5 edited the *Journal of Education*. In 1886-91 he was editor of *Education*, and president of Martha's Vineyard Summer Institute 1887-1905. Among his writings may be mentioned: *Nathaniel Mowry and His Descendants* (1878); *Richard Mowry: His Ancestors and Descendants* (1878); *Studies in Civil Government* (1887); *Elements of Civil Government* (1890); *Talks With My Boys* (1892); *A History of the United States* (1896); *The Uxbridge Academy: a Brief History* (1897); *First Steps in the History of Our Country* (1898; rev. ed. 1907); *American Inventions and In-*

ventors (1900); *Marcus Whitman and Early Oregon* (1901); *The Territorial Growth of the United States* (1902); *American Heroes and Heroism* (1903); *American Pioneers* (1905); and *Essentials of United States History* (1906), both the last two with Blanche S. Mowry; genealogical works, etc.

MOXA, n. *mŏks'ă* [F. *moxa*, probably a word of Eastern origin]: the down of a Chinese plant. In *med.*, a small cone of inflammable matter, used in Eastern countries as a cure for the gout or deep-seated pain by burning it on the skin; a small mass of combustible vegetable matter, employed for effecting cauterization. This peculiar form of counter-irritation was early practiced in the East, particularly by the Chinese and Japanese, from whom it was learned by the Portuguese. One or more small cones, formed of the downy covering of the leaves of *Artemisia moxa* (as used by the Chinese), or of the pith of various plants (as of the common sunflower), or of linen steeped in nitre, are placed on the skin over the affected part, and the ends remote from the skin are ignited. The combustion gradually proceeds through the cone and forms a superficial eschar on the skin. The surrounding parts are protected by a pad of wet rag, with a hole in it for the moxa.

MOX'OM, Philip Stafford, A.B., A.M., D.D.: American Congregationalist clergyman: b. Markham, Canada, 1848, Aug. 10. During the Civil war he served as 'captain's boy' (1862), then enlisted in the Illinois cavalry in 1863, and served till 1865. At the close of the war he entered upon a course of study at Kalamazoo College, Mich., and later studied at Shurtleff College, Ill. (1868-70). Being ordained to the Baptist ministry in 1871, he studied at Rochester Theological Seminary from 1875 to 1878, and was graduated from Rochester University in 1879, with the degree of A.B. From 1879 to 1885 he was pastor of the First Baptist Church of Cleveland, Ohio; and from 1885 to 1893 at the First Baptist Church of Boston, where he gained a reputation as a preacher of marked power. In 1894 he joined the Congregationalists and became pastor of the South Congregational Church at Springfield, Mass. From 1894 to 1897 he was university preacher at Harvard, and has preached frequently at other universities and colleges. He was at the World's Parliament of Religions, and presented a paper on *Immortality;* he was also at the World's Peace Congress, and has been delegate to several international peace congresses. He was written *The Aim of Life* (1894); *From Jerusalem to Nicæa, the Church in the First Three Centuries* (1895); and *The Religion of Hope* (1896).

MOYA, n. *moy'ă* [Sp.]: in *S. Amer.*, a term applied to the fetid sulphurous mud poured out from certain volcanoes.

MOZAMBIQUE, *mō-zam-bēk′* : territory on the e. coast of s. Africa; a colonial province of Portugal, under a gov.gen., though the actual possessions of Portugal consist of only a few stations, and her authority in the country is inconsiderable. It extends from Cape Delgado, lat. 10° 41′ s., to Delagoa Bay, 26° s., about 1,200 m. along the coast, with no definite limit on the west. The chief river, the Zambesi, divides it into two portions —M. proper on the n., and Sofala on the s. The coasts, which comprise large tracts of cultivated soil, yielding rich harvests in rice, are fringed with reefs, islands, and shoals; and between Delagoa Bay and Cape Corrientes, and from M., the principal station, to Cape Delgado, the shores are high and steep. The forests yield valuable ornamental woods; ivory is obtained from the hippopotami that inhabit the marshes; and gold and copper are found and worked. The elephant, deer, and lion inhabit the jungle; crocodiles are found in the rivers, and numerous flamingoes on the coasts. Fish and turtle are caught in great quantities on the islands and reefs; pearl-fishing is a source of considerable profit; cattle, sheep, and goats are numerous, and the principal exports are grain, gold-dust, honey, tortoise-shell, cowries, gums, and amber. The rainy season lasts from Nov. to Mar.: the summer heat is very great, and the climate, fine in the elevated tracts, is unhealthful on the low shores and in the swampy districts. Besides numerous fruits and vegetables, the grains are rice, millet, maize, and wheat. The govt. is inefficient, being, in most places, more in the hands of native chiefs than of the Portuguese. In former times the slave-trade was carried on here extensively; and 1846–57 four governors-gen. were removed by their govt. for countenancing, if not actively engaging in it. The colony is divided into six districts, and is ruled by the gov.gen. and his sec., assisted by a *junta*. Religion and education are supervised by about 12 Rom. Cath. priests, but seem to be at the lowest ebb. The Portuguese arrived here 1497, attracted by rumors of the wealth of the country and the excellence of its ports. The principal settlements are Mozambique, Quilimane, Sena, and Tete. Pop. 300,000.

MOZAMBIQUE′, properly ST. SEBASTIAN OF MOZAMBIQUE: town, capital of the Portuguese territory of M., on a small coral island, on the e. coast of Africa, close to the shore, lat. 15° 2′ s. It is defended by three forts, has houses of stone, flat-roofed and unattractive, and contains a large square in which the palace of the gov. and the custom-house are the chief buildings. In former times all the markets of the world were supplied with slaves from Mozambique. Its commerce, now inconsiderable, is chiefly with India, and is carried on by Arabs. Pop. (1901) 5,511, of whom 285 were Europeans, 226 Asiatics, and about 5,000 natives.

MOZAMBIQUE′ CHANNEL: part of the ocean between the island of Madagascar and the s.e. coast of Africa; about 1,000 m. in length, and about 450 in average breadth. At its n. extremity are the Comoro Islands. Over the n. portion the monsoons blow. Black whales, yielding spermaceti, abound.

MOZARABIAN, *mŏz-a-rā′bĭ-an* (or MOZARABIC, *mŏz-a-răb′ĭk*), LITURGY: liturgy of the Hispano-Gallican group—ascribed by some to the apostles, but by the majority of writers to St. Isidore of Sevilla, who redacted it, in co-operation with the Fathers of the 4th Council of Toledo, 633—originally in use among those Christian inhabitants of Spain (Muzarabians, Mostarabians, Mustarabians) who remained faithful to their religion after the Arabic conquest. Its real origin is lost in antiquity. It is called also the Gothic Liturgy, and differs in important respects from the Roman. Gregory VII. first compelled most of the Spanish churches and convents to adopt the common uniform liturgy of the Roman Church, near the end of the 11th c. Only six Mozarabic congregations, chiefly in Leon and Toledo, were allowed to retain their ancient ritual, but it soon fell into disuse even among these. Abp. Ximenes of Toledo expressly founded a chapel at Toledo, 1500, in which mass was to be said according to the Mozarabian manner, lest it might entirely fall into oblivion. He further caused a number of learned priests, Alfonso Ortiz among them, to collate all the different Mozarabian liturgical MSS. to be found in the different churches, chapels, and convents; and, finally, there was edited, under his auspices, the *Missale Mistum secundum Regulam Beati Isidori Dictum Mozarabicum* (1500–02), which has unfortunately remained incomplete. A whole third of the church-year is left out entirely. The M. L. is said to be now in use only in Toledo and one other church in Spain. The peculiar affinity of this liturgy with the Gallican on the one, and the Greek on the other hand, makes its study extremely important for the history of the ancient church.

MOZART, *mo-zârt′* or *mo′zârt*, Ger. *mo′tsârt*, JOHANN CHRYSOSTOM WOLFGANG GOTTLIEB: one of the greatest of musical composers: 1756, Jan. 27—1791, Dec. 5; b. Salzburg, in w. Austria, where his father, a violinist, was subdirector of the archiepiscopal chapel. His extraordinary musical talents were cultivated to the utmost by his father. At the age of four he played the clavichord, and composed a number of minuets and other pieces still extant. When only six years of age, his performances were so remarkable, that his father took him and his sister, who possessed similar gifts, to Munich and Vienna, where they obtained every kind of encouragement from the Elector of Bavaria and Emperor Francis I. In 1763 and 4 the Mozart family visited Paris and London. At the age of seven, young Mozart surprised a party of musicians, including his father, by taking part, at sight, in a trio for stringed instruments. Symphonies of his own com-

MOZART.

position were produced in a public concert in London, and while there, he composed and published six sonatas, and made acquaintance with the works of Handel, recently deceased. Two years later, when but 12 years of age, he composed the music for the religious service, and for a trumpet concert at the dedication of the Orphan House Church in Vienna, and conducted it in presence of the imperial court. In 1769, at the age of 13, he was appointed director of the concerts of the Prince Abp. of Salzburg; and in the same year travelled with his father to Italy, where he created unequalled enthusiasm by his performances and compositions. In Rome, he went to the Sistine Chapel in Holy Week to hear the *Miserere*, whose music the singers were forbidden to transcribe; and returning to his hotel wrote the music note for note. He composed the opera of *Mithridates* at Milan, 1770, Oct. 3; and it was publicly performed there in Dec. At the age of 16, he was the first claveçinist in the world; he had produced two requiems and a stabat mater, numerous offertories, hymns, and motetts, 4 operas, 2 cantatas, 13 symphonies, 24 pianoforte sonatas, besides a vast number of concertos for different instruments, trios, quartets, marches, and other minor pieces. In 1779, he was appointed composer to the imperial court at Vienna, where he then fixed his residence, and there the musical works were composed on which chiefly his great fame depends. His office in Vienna, however, was rather honorary than lucrative, and he lived by concerts, musical tours, teaching of music, and the small profits from the sale of his published works, till an offer to him of a large salary by the king of Prussia led the emperor to give him 800 florins (abt. $320) a year. Indeed, so small had been the pecuniary returns for all his marvellous work, and so great the necessary expenses of his migratory public life, that he and his father's family were drawing near to penury. His great opera *Idomeneo* was composed 1780, with a view to induce the family of Constance Weber, afterward his wife, to consent to the marriage. It is unpleasant to be compelled to judge from all accounts that the marriage added little to M.'s happiness, and even hindered his prosperity in a pecuniary sense. This opera forms an epoch not only in the composer's life, but also in the history of music. In construction, detail, instrumentation, and every imaginable respect, it was an enormous advance on all previous works of the kind, and established his repute as the greatest musician whom the world had seen. *Die Entführung aus dem Serail* followed. His six quartets, dedicated to Haydn, appeared 1785, and 1786 *Le nozze di Figaro*. In 1787, he produced his *chef-d'œuvre Don Giovanni*, which, though received with enthusiasm at Prague, was at first beyond the comprehension of the Viennese. *Cosi fan tutti* appeared 1790. To 1791, the last year of his short life, we owe *Zauberflöte*, *La Clemenza di Tito*, and the sublime requiem composed in anticipation of death, and finished only a few days

before his decease. The mighty musician died in poverty at the age of 35; and the next day after his death his body was carried to a pauper's grave.

In the intervals of his greater works Mozart composed the majority of the orchestral symphonies, quartets and quintets, which are an almost indispensable part of the program of every concert in the present day, besides masses as familiar in England and the United States as in Roman Catholic Europe, innumerable pianoforte concertos and sonatas, and detached vocal compositions—all perfectly finished. To Haydn Mozart always acknowledged his obligations; but Haydn's obligations to Mozart are at least as great. Haydn, though born 24 years earlier, survived Mozart 18 years, and all his greatest works, written after Mozart's death, bear manifold traces of Mozart's influence. Mozart's habit in composition was, when he had conceived an idea, to elaborate it mentally until it was complete, and then to commit it to paper. Mozart is the first composer in whose works all traces of the old tonality disappear; he is the father of the modern school. 'No composer has ever combined genius and learning in such perfect proportions; none has ever been able to dignify the lightest and tritest forms by such profound scholarship, or at the moment when he was drawing most largely on the resources of musical science, to appear so natural, so spontaneous, and so thoroughly at his ease.' See the Lives by Holmes (Lond. 1845) and Jahn (Leip. 1856). The Life by Nohl (2d ed. 1877) and the Letters have been translated by Lady Wallace.

MOZLEY, *mōz'lĭ*, James Bowling, D.D.: 1813, Sep. 15—1878, Jan. 4; b. Lincolnshire, England. He graduated with honors from Oriel College, Oxford, 1834; was elected a fellow at Magdalen College 1840, received ordination in the Church of England as a priest 1844, was appointed vicar of Shoreham 1856, and in the same year was married. Through the influence of Mr. Gladstone he was made canon of Worcester 1869, also 1871 regius professor of divinity at Oxford. He was Bampton lecturer 1865, and from the course of lectures grew his great work on *Miracles*. He was an ardent admirer of Cardinal Newman, but did not follow him to the Church of Rome. He was an able writer, and some of his sermons are said to have been among the greatest of recent times. Among his works were *Essays, Historical and Theological*, 2 vols.; *A Treatise on the Augustinian Doctrine of Predestination; Ruling Ideas in Early Ages; The Primitive Doctrine of Baptismal Regeneration; The Theory of Development in Doctrine;* essays on *The Argument of Design and Principle of Causation*, and *Practical and Parochial Sermons*. He died at Oxford, England.

MOZOOMDAR, Protap Chunder: b. about 1840, Calcutta, India. After a course of study in a Hindu college

he joined the society of theists in India known as the Brahmo Somaj, and became an earnest co-worker with Keshub Chunder Sen, a prominent theist and leader of the movement to abolish caste. Mozoomdar visited England 1874, and the United States 1883. He was cordially received in this country as the representative of a great religious movement. His system is Hinduism, modified by Christianity. While believing in God, in the immortality of the soul, and in the efficacy of prayer, he rejects the doctrine of the divinity of Christ—whom, however, he highly magnifies, and holds that no atonement for sin is required. He has written for various periodicals, and is author of *The Oriental Christ.*

MOZYR, *mō-zēr':* town in the government of Minsk, Russia, 150 m. s.s.e. of Minsk. It is a town of considerable antiquity, and took an important part in the wars between the various Russian princes, previous to the Tartar invasion. It was unsuccessfully besieged by the Tartars 1240. Under the Polish rule it was the chief town of a district, and remained so after its annexation to Russia 1795. 150 barges and 200 rafts are annually freighted here with goods to the amount of 500,000 rubles (about $280,000). Pop. about 10,000.

MR. n. *mĭs'tėr:* a contr. of *master,* prefixed to the names of men. MRS. n. *mĭs'trĕs,* contr. for *mistress,* prefixed to the names of married or elderly women: see MASTER.

MRO-HOUNG. See ARACAN (city).

M-ROOF, n. *em-rûf* [named from the shape]: in *carpentry,* a double roof, consisting of two ordinary gable-roofs and a valley between them.

MSKET, *m'skĕt,* or MTSCHET'HA (also other forms): one of the most ancient Georgian towns, in the present government of Tiflis, about 10 m. n.n.w. of the town of Tiflis. It is said to have been the seat of the Georgian kings till the 5th c., and contained the first Christian church of Georgia, built during the first half of the 4th c.: in this church the Georgian kings were crowned and buried. The site of Msket is now marked by a few huts.

M-TEETH, n. *m-tēth:* in *saw.,* teeth in groups, of two like the projecting angles of the letter M.

MTZENSK, *m'tsĕnsk:* town of Russia, government of Orel, 646 m. s.s.e. of St. Petersburg; on the Zusha, which communicates through the Oka with the Volga. The old cathedral, on a steep rock, gives picturesqueness to the town. Mtzensk receives historical mention as far back as 1147. Its trade, chiefly with St. Petersburg and Moscow, amounts in value to more than 1,000,000 rubles ($560,000). Pop. 15,000.

MUCEDINOUS, a. *mū-sē'dĭ-nŭs* [Gr. *mukēs,* a mushroom, a mold]: in *bot.,* like a mold.

MUCH, a. *mŭch* [Icel. *mjök;* Dan. *megen;* Swiss,

michel, much, great: comp. L. *magnus*, much: Gael. *moid*, greater]: great in quantity or amount; long in time: AD. in and to a great degree; greatly; nearly: N. a great deal; a great quantity; a heavy service or burden: compar. *more;* superl. *most.* TO MAKE MUCH OF, to treat with regard; to pamper; to fondle. MUCH AS, nearly. AS MUCH, to the same extent. MUCH AT ONE, nearly of equal value; equal influence.

MUCHEL, a. *mŭk'l* [Icel. *mykill*, much: Scot. *muckle*, great]: in *OE.*, much.

MUCIC, a. *mū'sĭk* [F. *mucique*—from L. *mucus*, mucus]: of or from gum. MUCIC ACID, an acid formed by the action of nitric acid on sugar of milk, gum, etc. MUCIDINE, n. *mū'sĭ-dĭn*, one of two albuminoids which occur in crude wheat-gluten.

MUCILAGE, n. *mū'sĭ-lāj* [F. *mucilage;* Sp. *mucilago;* It. *mucilaggine*, mucilage—from mid. L. *mucilāgĭnem*, moldy moisture—from L. *mucus*, the viscous substance within the nose]: a solution of gummy matter of any kind in water. In *chemistry*, mucilage or *Bassorin* ($C_{12}H_{20}O_{10}$) is a modification of gum which is insoluble in water, but when moistened with it, swells into a gelatinous mass (see GUM). It is contained abundantly in gum tragacanth; and many seeds, such as linseed, quince seed, etc., and certain roots, such as those of the marsh-mallow, furnish it in large quantity. Alkalies render it soluble in water, and convert it into true gum; and prolonged boiling in water produces the same effect. Nitric acid converts it into mucic and oxalic acids. MUCILAGINOUS, a. *mū'sĭ-lăj'ĭ-nŭs*, pertaining to or resembling mucilage; slimy. MU'CILAG'INOUSNESS, n. *-nĕs*, the state of being mucilaginous.

MUCIN. See under MUCUS.

MUCIPAROUS, a. *mū-sĭp'ă-rŭs* [L. *mucus*, the viscous substance within the nose; *parĭō*, I produce]: secreting or producing mucus.

MUCK, n. *mŭk* [Norw. *mokkok*, a muck-heap—from *moka*, to cast aside with a shovel: Icel. *myki*, dung: Dan. *muge*, to clear away the dung in stables: comp. Gael. *mugh*, to begin to rot]: the cleansings of cattle-stalls; dung in a moist state; filth: V. to manure with dung. MUCK'ING, imp. MUCKED, pp. *mŭkt.* MUCKY, a. *mŭk'ĭ*, dirty; filthy. MUCK-HEAP, a dunghill. MUCK-WORM, a worm bred in muck; a miser.

MUCK, n. *mŭk* [Malay, *amok*, signifying to kill, to engage furiously in battle: see AMUCK, which is properly one word, and an *adverb*]: a sudden wild attack upon every one met with, as among the Malays and Javanese —hence to *run amuck.* RUNNING AMUCK, an indiscriminate murderous attack upon friends and enemies, as the inhabitants of Java and other Asiatic islands often make under the influence of a remarkable frenzy, in which fits they aim at indiscriminate destruction.

MUCKERS, *mŭk'ėrz:* popular name of an extraordinary sect, which sprang up at Königsberg, Germany, 1835. The movement seems to have originated in the dualistic and Gnostic views of John Henry Schönherr (1771—1826, b. Memel) concerning the origination of the universe by the combination of two spiritual and sensual principles. His followers carried out his system much more completely than himself. The most notable were two clergymen, Ebel and Diestel, the former an archdeacon. By them, sexual connection seems to have been elevated into an act of worship, and the chief means of the sanctification of the flesh, by which the paradisiac state was to be restored. Ebel and Diestel founded a society, to which women—some of noble birth—attached themselves. Three ladies lived in Ebel's house, who were popularly regarded as his three wives; and Hepworth Dixon, in his work *Spiritual Wives* (1868), tells us that one of them, a young widowed countess, whose beloved husband had fallen on the field of Lützen, and whom Ebel enticed from the seclusion and deep melancholy in which she lived, was described by him as representing to him the principle of Light (*Licht-natur*); another of the ladies represented the principle of Darkness (*Finsterniss-natur*); and the third represented the principle of Union (*Umfassung*). The last was his legal wife, but held the subordinate place in his extraordinary household. Ere long, public feeling was excited against the Muckers, who were said to be guilty, under forms of piety, of the most odious licentiousness in their meetings. The scandal became great in Königsberg, and a garden there acquired the name of the Seraphs' Grove. The subject was brought before the courts (1839-42), and the result was that Ebel and Diestel were degraded from their offices, and the latter was further punished by imprisonment. It is alleged, however, by some who have examined the whole evidence produced, that the decisions did not proceed on a calm judicial inquiry, but were dictated by strong prejudice against the accused, on account of their religious views and eccentricities; and, in particular, that the evidence gives no support whatever to the charge of licentiousness. The sentence of imprisonment was quashed on appeal 1842. Hepworth Dixon has directed attention to the similarity of the Mucker movement with that of the Princeites (see AGAPEMONE) in England, and that of the Bible Communists or Perfectionists (q.v.) in America, all of which arose about the same time.

MÜCKE, HEINRICH: German painter: b. Breslau 1806, Apr. 9; d. Düsseldorf 1891, Jan. 16. He became the pupil of Schadow in the Berlin Academy in 1824 and followed him to Düsseldorf in 1826. He was commissioned by the Count Spee to fresco the Castle of Heltorf with scenes from the life of Frederick Barbarossa, and on the completion of this work set out on his student travels

through Italy (1833). On his return he painted numerous religious and historical pictures, and furnished illustrations for certain *éditions de luxe* of standard authors. His principal works are: *St. Catharine Carried by Angels to Mount Sinai* (1836); *St. Elizabeth of Hungary Distributing Alms* (1841), both in the Berlin Museum; *Dante Reciting the Divine Comedy; The Madonna and Child with David; John the Baptist and St. Aloysius,* a fresco in St. Andrews Church, Düsseldorf; *The Storming of Jerusalem by Godfrey de Bouillon; The Introduction of Christianity into Wüpperthal,* a fresco in the town hall at Elberfeld; *Scenes from the Life of St. Meinhard, Count von Zollern,* in Sigmaringen, over the tomb of Prince Anton von Hohenzollern; *Christ on the Cross,* a large altar-piece in Marienberg; *The Good Shepherd,* altar-piece in Kaisersworth; *Lurlei; Ecce Homo;* etc. He also produced some water colors and designs illustrating the legends, historic incidents, and folk-lore of the whole Rhine valley. From 1844 to 1868 he was teacher of anatomy in the Düsseldorf Academy.

MUCOR, n. *mū'kŏr* [L. *mucor,* a moisture from vines, which is injurious to them]: moldiness; a certain filamentous fungus.

MUCOUS, a. *mū'kŭs* [L. *mucus,* discharge from the nose: It. *muco:* F. *mucus*]: pertaining to mucus; secreting mucus; slimy. MU'COUSNESS, *n. -nĕs,* the state of being mucous. MUCOUS MEMBRANE, the moist glandular lining of the canals and cavities of the body (see below).

MU'COUS MEM'BRANES: moist glandular linings of the cavities of the body. Under the term MUCOUS SYSTEM, anatomists include the skin, mucous membranes, and true glands, all of which are continuous with one another, and are essentially composed of similar parts. For the skin and the glands, see those titles. It remains to speak of the great internal mucous tracts. These are the alimentary mucous membrane, the respiratory mucous membrane, and the genito-urinary mucous membrane.

The *alimentary mucous membrane* commences at the lips, and not only forms the inner coat of the intestinal canal from the mouth to the anus, but gives off prolongations which, after lining the ducts of the various glands (the salivary glands, the liver, and the pancreas) whose products are discharged into this canal, penetrate into the innermost recesses of these glands, and constitute their true secreting element. Besides these larger offsets, there are in the stomach and small intestine an infinite series of minute tubular prolongations, for whose anatomical arrangement and function, see DIGESTION.

The *respiratory mucous membrane* begins at the nostrils, and under the name *Schneiderian* or *pituitary membrane,* lines the nasal cavities, whence it sends on either side an upward prolongation through the lacrymal duct

to form the *conjunctiva* of the eye; backward, through the posterior nares (the communication between the nose and the throat), it sends a prolongation through the Eustachian tube to the middle ear (the cavity of the tympanum), and is continuous with the pharyngeal mucous membrane (which is a portion of the alimentary tract); it then, instead of passing down the esophagus, enters and forms a lining to the larynx, trachea, and bronchial tubes to their terminations. From the continuity of these two tracts, some writers describe them as a single one, under the name of the gastro-pulmonary tract.

The *genito-urinary mucous membrane* commences at the genito-urinary orifices, lines the excretory passages from the generative and urinary organs, and is the essential constituent of the glands of both. See KIDNEY.

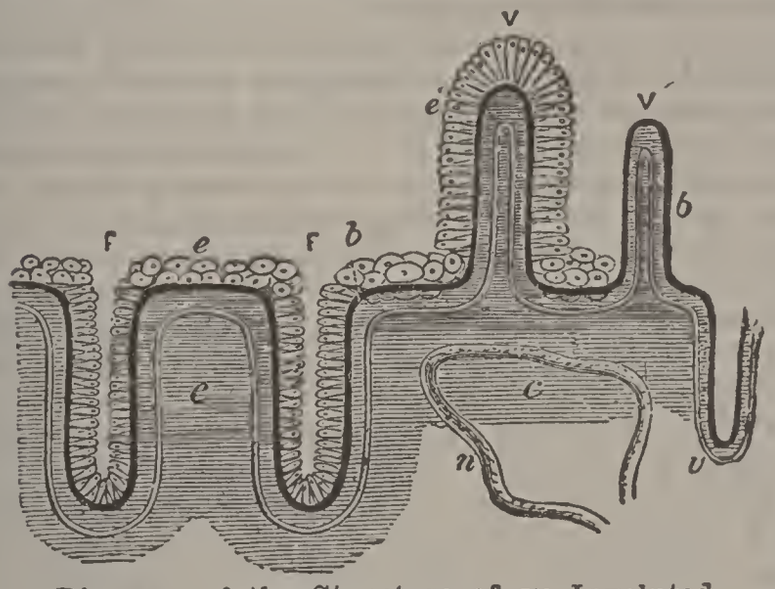


Diagram of the Structure of an Involuted Mucous Membrane:
Showing the continuation of its elements in the follicles and villi:

F, F, two follicles; *b*, basement membrane; *c*, submucous tissue; *e, e*, epithelium; *v*, vascular layer; *n*, nerve; V, villus covered with epithelium; **V'**, villus whose epithelium has been shed.

We thus see that mucous membranes line all those passages by which internal parts communicate with the surface, and by which matters are either admitted into or eliminated from the body. As a general rule, they are soft and velvety, and of more or less red color, from their great vascularity, but they present certain structural peculiarities according to the functions which they are required to discharge. In all principal parts of the mucous tracts the mucous membrane presents an external layer of Epithelium (q.v.) resting on a thin, transparent, homogeneous membrane, which from its position is termed the *basement membrane;* and beneath this a stratum of vascular tissue of variable thickness, which usually presents either outgrowths in the form of papillæ and villi,

or depressions or inversions in the form of follicles or glands, or both. The follicles are almost invariably present, but the papillæ and villi are limited to the alimentary or gastro-intestinal mucous membrane. Although the various kinds of epithelial cells discharge a special office in relation to the peculiar function of the mucous membrane upon which each kind occurs, yet they all serve one general purpose—namely, that of protecting the surfaces on which they are placed. This protecting power is increased by the presence of the secretion known as *mucus*, which ordinarily forms an extremely thin layer on these membranes, but when they are irritated or inflamed, is secreted in very considerable quantity. The exact mode of its formation is a disputed question, but it is generally believed to be the product of the gradual solution of the uppermost epithelial cells. The most important constituents of mucus is *mucin*, which forms 2.4 to 9 per cent. of nasal and bronchial mucus. This mucin contains 12.64 per cent. of nitrogen, and is the substance which gives to mucus its viscid and tenacious character. Normal mucus is devoid of smell and taste, and almost, if not quite, neutral; hence its constant presence in the mouth gives rise to no disagreeable sensation.

MUCRO, n. *mū'krō* [L. *mucro* or *mucrōnem*, a sharp point]: in *bot.*, a straight, stiff, and sharp point. MUCRONATE, a. *mū'krō-nāt*, abruptly pointed by a sharp spinous process. MUCRONULATE, a. *mū-krŏn'ū-lāt*, having a little, hard, sharp point.

MUCUS, n. *mū'kŭs* [L. *mucus*, the discharge from the nose (see MUCOUS)]: the slimy substance secreted from the mucous membrane (see MUCOUS MEMBRANES); in *bot.*, a peculiar matter forming a covering of certain seaweeds. MUCULENT, a. *mū'kū-lĕnt*, mucus-like; slimy. MUCIN, n. *mū'sĭn*, the nitrogenous principle of mucus.

MUD, n. *mŭd* [Low Ger. *mudde;* Bav. *mott;* It. *mota;* Fin. *muta*, mud: Sw. *modd*, snow trodden by cattle into slush: prov. Eng. *mudge*, mud, dirt]: soft, slimy earth or debris; the wet filth of roads: V. to bury among mud; to soil with mud; to render muddy. MUD'DING, imp. MUD'DED, pp. MUD'DY, a. *-dĭ*, consisting of mud; containing mud; turbid; dirty; impure; soiled or besmeared with mud; cloudy in mind; dull or stupid: V. to soil with mud; to dirty; to cloud. MUD'DYING, imp. MUD'DIED, pp. *-dĭd:* ADJ. soiled with mud; rendered turbid. MUD'DILY, ad. *-dĭ-lĭ*. MUD'DINESS, n. *-nĕs*, foulness caused by mud or sediment. MUD-DRUM, in a locomotive, a cylinder attached to the under side of the 'waist' of the boiler, to receive the deposits from the feed-water. MUD-HOLE, in a locomotive, an opening in the lower part of a boiler through which the sediment deposited by the water is removed. MUD-RING, in a locomotive, the wrought-iron ring which unites the inner and outer shells of the fire-box; completely surrounding the inner. MUD-EEL (see SIREN).

MUD-HEN (see COOT). MUD-LARK, one who cleans out common sewers, or who searches for articles lost in such places, or for things lost among mud or slime; a dirty child. MUD-SILL, the sill or timber of a bridge which is laid at the bottom of a river, lake, etc. MUD-STONE, a name applied to those shales which return to mud on exposure to the air. MUD-SUCKER, a sea-fowl. MUD-WALL, a wall built of dried mud.—SYN. of 'muddy, a.': foul; gross; dark; dull; stupid; cloudy.

MUDAR, *mū'dâr* (*Calotropis*): genus of shrubs of nat. ord. *Asclepiadaceæ*, distinguished by a coronet of fine blunt processes adhering to the base of the filaments. They are natives of the E. Indies, and the bark of the root, and the inspissated milky juice of some of them, are much used there as an alterative, purgative, emetic, and sudorific medicine. The medicinal properties of M. have been well known in India for many centuries, and have begun to attract the attention of European physicians. It is found of great value in elephantiasis, and in leprosy and other obstinate cutaneous diseases, as well as in some spasmodic affections, and in syphilis.—The species most common in s. India is *C. gigantea;* in n. India, *C. Hamiltonii;* while *C. procera*, said to have an extremely acrid juice, extends into Persia, and even into Syria. M. is very common in India, springing up in uncultivated ground, and often troublesome in that which is cultivated. It is a large shrub, with stems often thicker than a man's leg; and broad fleshy leaves. It grows where almost nothing else will, on very dry sands, and rapidly attains a large size. The silky down of the pods is used for making a soft, cotton-like thread; but is short, and not easily spun. The inner bark also yields a strong and useful fibre, which makes excellent cordage and fishing-lines; but the mode of preparation hitherto used makes it costly.—The inspissated milky juice of M., collected by making incisions in the bark, is used as a substitute for caoutchouc and gutta-percha. It becomes flexible when heated.—The M. of medicine contains a principle called *Mudarine*, on which its medicinal virtues are supposed to depend, and which possesses the rare property of gelatinizing when heated, and becoming fluid when again cooled.

MUDDLE, v. *mŭd'l* [from Eng. *mud;* Low Ger. *musseln*, to daub, to dirty: prov. Dan. *mossel*, confusion: Dan. *muddre*, to stir up mud—*lit.*, to root out with the bill, as geese and ducks do]: to make foul or turbid; to cloud or stupefy with drink; to contract filth; to confuse or disorder: N. in *familiar language*, confused or turbid state. MUDDLING, imp. *mŭd'ling*. MUDDLED, pp. *mŭd'ld*: ADJ. in a half-intoxicated or stupefied state.

MUDDY: see under MUD.

MUD-FISH (*Amia*) : curious genus of fishes, forming the family *Amiidæ* of the order *Ganoidei* of Müller, though its position among the *Ganoidei* is determined only by anatomical characters, in which it agrees with sturgeons and the rest of that order, for the scales are not ganoid, and are not osseous plates, but are flexible and rounded, and destitute of enamel. Similar scales, however, are found in fossil genera regarded by Agassiz as ganoid. In habit, the M. resembles osseous fishes rather than ganoids. Except in the absence of teeth on the tongue, the mouth resembles that of a trout. The body is long and flexible, with a bony vertebral column; there are two nasal cirri; the head is flat, covered with a very thin mucous skin, immediately under which the bones appear as sculptured plates. More than ten species are known, natives of the fresh waters of America. The WESTERN M. (*A. calva*) is 18 in. to 3 ft. long, bluish-black above, white below. It inhabits the great northern lakes of N. America, and is found as far s. as Carolina. It feeds chiefly on cray-fish and other crustaceans. It is not esteemed as food, though sometimes used by the Indians.

MU'DIR: see MOODIR.

MUDKI, *môd'ki*, usually spelled MOODKEE: small town of n.w. Hindustan, 28 m. s.e. of the Sutlej, 70 m. s.e. of the city of Lahore, on the Ravi. Here the first battle in the Sikh war of 1845–6 was fought, 1845, Dec. 18, when the British under Sir Hugh Gough repulsed the Sikhs, and Sir Robert Henry Sale, 'Fighting Bob,' was killed. —Pop. of M. about 6,000.

MUËZZIN, n. *mū-ĕz'zĭn* (spelt also MOOUZZIN, MUWAZZIN, MUEDZIN) [Ar. *muazzin*—from *azana*, to listen]: Mohammedan official attached to a mosque, whose duty it is to announce from the minaret of the mosque the different times of prayer. His chant (Adan) consists of these words, repeated at intervals: 'Allah is most great. I testify that there is no God but Allah. I testify that Mohammed is the Apostle of Allah. Come to prayer. Come to security.' ['Prayer is better than sleep' is added in the morning, at the Subh or Fegr. See MOHAMMEDANISM.] 'Allah is most great. There is no deity but Allah!' Besides these regular calls, two more are chanted during the night for those pious persons who wish to perform special nightly devotions. The first (Ula) continues, after the usual Adan, in this manner: 'There is no deity but Allah! He hath no companion—to Him belongeth the dominion—to Him belongeth praise. He giveth life, and causeth death. And He is living, and shall never die. In His hand is blessing, and He is almighty,' etc. The second of these night-calls (Ebed) takes place an hour before daybreak, and begins as follows: 'I extol the perfection of Allah, the Existing for ever and ever: the perfection of Allah, the Desired, the Existing, the Single, the Supreme,' etc. The office of a M. is generally intrusted to blind men only.

lest they might, from their elevation, have too free a view over the surrounding terraces and harems. The harmonious and sonorous voices of the singers, together with the simplicity and solemnity of the melody, make a strikingly poetical impression upon the mind of the hearer in daytime; much more impressive, however, is the sacred chant when resounding from the height of the mosque through the moonlit stillness of an eastern night.

MUFF, n. *mŭf* [Dan. *muffe;* Ger. *muff*, a muff: Dut. *moffel*, a winter glove or sleeve]: a cover usually in the form of a cylinder, generally made of fur, into which the hands may be placed for warmth. *Note.*—MUFF was originally a long hanging sleeve, as worn by women, in which the hands could be wrapped in cold weather—see Skeat.

MUFF, n. *mŭf* [Dut. *maf*, dull, lazy: prov. Eng. *maf-fling*, a simpleton]: a fool; a stupid fellow.

MUFFETTEE, n. *muf-fĕt-tē′* [dimin. of muff]: small muff worn over the wrist; a wristband of fur or worsted.

MUFFIN, n. *mŭf′in* [from Eng. *muff*, a cover for the hands, so called in allusion to its lightness]: a light, round, spongy cake.

MUFFINEER, n. *mŭf-fĭn-ēr′:* a dish for keeping toasted muffins hot.

MUFFLE, n. *mŭf′l* [Sp. *mufla;* F. *moufle*, a muff, a muffle]: in *assaying*, an arched vessel with a flat bottom, placed in the furnace to receive the cupels.

MUFFLE, v. *mŭf′l* [Ger. *muffel;* OD. *moffel*, other forms of *muff* and *moff*, a fur receptacle for the hands: F. *moufle*, a muffle (see MUFF 1)]: to cover or wrap up closely, as the neck or face; to cover or conceal; to deaden the sound of by winding something round. MUFF′LING, imp. MUFFLED, pp. *mŭf′ld:* ADJ. covered closely, especially the face or neck for warmth; blindfolded; covered with a substance to deaden sound, as oars. MUFFLER, n. *mŭf′lėr*, a warm covering for the neck and face; a kind of mask; part of a woman's dress by which the face is wholly or partially concealed. A MUFFLED PEAL, bells rung with cloths wrapped round the clappers.

MUFTI, n. *mŭf′tĭ* [Ar. *mufti*, expounder of the law; in Mohammedan countries, magistrate]: the high-priest or chief of the Mohammedan ecclesiastical order; thence a doctor of the law, a magistrate. The Turkish grand M. is the supreme head of the Ulemas (servants of religion and laws), and has, together with the Grand Vizír (Vizír Azim), the supreme guidance of the state, nominally ruled by the sultan. His is the chief spiritual authority, and in this capacity he is denominated also Sheikh-al-Islam (Lord of the Faith). The Imáms (priests), however, chosen from the body of the Ulemas, are, from the moment of their official appointment, under the authority of the Kislar-Aga, or Chief of the Black Eunuchs. The better class of the Ulemas are the teachers and expounders of the law, from among whom the Mollahs and

Cadis are elected. The Turkish laws have their basis in the Koran; the M. thus, as head of the judges, wields a spiritual authority. His is generally the office also of girding the sultan with the sword at his ascension to the throne, a ceremony performed at the Mosque of Eyub, and corresponding to coronation. The M. is elected and may be deposed by the sultan, and his position has in modern days lost much of its former dignity and importance. His Fetwa, or decision, though attached to the imperial decrees, imparts little additional weight. Nor is his own dictum in things spiritual always finally binding. The only prerogative of Muftis and Ulemas which has remained untouched, is their being exempt from bodily or otherwise degrading punishments; though it is the rule, also, that their property can never be confiscated, but descends to their successors.—M., among English military men, is a familiar term for the civilian dress of an officer off duty; undress. IN MUFTI, among *military men*, out of uniform; in disguise.

MUG, n. *mŭg* [Sw. *mugg*, an earthen cup: Ir. *mugan*, a mug: O. Ger. *magele;* Swiss, *mayel*, a cup, a mug]: an earthen or metal vessel for drinking from; a cup.

MUG, n. *mŭg* [It. *mocca*, a mocking or apish mouth: Gael. *smuig*, a snout, a face in ridicule; *muig*, a discontented countenance, a frown]: in *slang*, a face; the countenance; an ugly face.

MUGGLETONIANS, *mŭg-gl-tō′nĭ-anz:* sect in England, founded about 1651, by John Reeve, and Ludovic Muggleton (1607–97), obscure men, who claimed to have the spirit of prophecy. Muggleton was a journeyman tailor. He professed to be the 'mouth' of Reeve, as Aaron was of Moses. They affirmed themselves to be the *two witnesses* of Rev. xi. They asserted a right to curse all who opposed them, and did not hesitate to declare eternal damnation against their adversaries. They favored the world with a number of publications, one of which—directed particularly to the Parliament and Commonwealth of England, and to His Excellency the Lord Protector Cromwell—was entitled *Remonstrance from the Eternal God.* The prophets were at that time imprisoned as nuisances 'in Old Bridewell.' Another publication was a *General Epistle from the Holy Spirit*, dated from 'Great Trinity Lane, at a Chandler's Shop, overagainst one Mr. Millis, a Brown Baker, near Bow Lane End, London.' The first complete ed. of Muggleton's (professedly also Reeve's) works was published 1756; another appeared 1832. The M. denied the doctrine of the Trinity; they held anthropomorphist opinions; and they added many strange doctrines of their own, e.g., that the devil became incarnate in Eve. The M. existed in England as a sect till the second quarter of the 19th c.; but the census of 1851 showed no trace of them, though probably they are not yet quite extinct.

MUGGY, a. *mŭg′gĭ*, or MUG′GISH, a. *-gĭsh* [Icel. *mugga*, darkness caused by rain: Bret. *mouga*, to stifle: W. *mygu*, to smoke: Gael. *muig*, to smother—also cloudy, dark; *mùch*, to suffocate]: warm, damp, close, and suffocating, as the air; murky. MUG′GINESS, n. *-gĭ-nĕs*, the state of being muggy.

MUGIL, n. *mū′jĭl* [L. *mugil*, a sea-fish]: mullet. MUGILIDÆ: see MULLET.

MUGWORT, n. *mŭg′wėrt* [a corruption of *midge-wort*]: a wild flower, probably so named as being good against midges; the *Artemĭs′ĭă vulgāris*, ord. *Compositæ*, sub-ord. *Corymbif′ĕræ*.

MUGWUMP, n. *mŭg′wŭmp* [said to be an Indian word signifying chief, or leader]: name applied first in reproach to those republicans who in the presidential campaign of 1884 refused to support the republican candidate, but voted for and used their influence to elect the democratic nominee; hence, a dissatisfied, disappointed, displeased person.

MUHALITCH, *mŭh-â-lēch′*, or MUALICH: town of Asia Minor, in Anatolia, 13 m. s. of the Sea of Marmora, 37 m. w. of Brusa, picturesquely situated on low hills. It is large and straggling, contains about 1,500 houses and three or four khans, and is the seat of considerable trade, chiefly in exporting silks, wool, and fruits to Constantinople. Pop. 11,000.

MUHESUR, *mū-hĕs-ėr′*: town of India, territory of Indore (q.v.), on the right bank of the Nerbudda, 280 m. n.e. of Bombay. The fort contains many houses within its inclosure, but is in bad repair. There is a new palace, of gray basalt, overcharged with sculptures of human beings, and of elephants, tigers, and other animals. There are also numerous and costly Hindu temples, erected by Ahalya Bai, relict of Kunda Rao, son of Maharajah Mulhar Rao. The river, here about 2,000 ft. wide, has a rapid stream of blue water, rushing over a rocky bottom; the banks are 60 or 80 ft. high in the dry season. Access to the water is gained by a ghât, or vast flight of stone stairs, which extends below the water at its lowest level. Pop. abt. 17,000.

MUHLBERG, *mül′bĕrċh*: town of Prussian Saxony, on the Elbe, 36 m. s.e. of Wittenberg; (pop. 3,461 in 1880). Here, 1547, Apr. 24, was fought a battle between Johann-Friedrich, Elector of Saxony, and Emperor Charles V. fraught with the most important results to Protestantism in Germany. The battle was soon decided in favor of the emperor; Johann-Friedrich was taken prisoner, and his territories were transferred to Maurice, representative of the ducal family of Saxony. From this time till 1552, the Rom. Catholics were triumphant in Germany.

MUHLENBERG, *mü'lĕn-bĕrg*, Frederick Augustus Conrad: 1750, Jan. 1—1801, June 4; b. Trappe, Penn.; second son of Heinrich Melchior M.; was educated at Halle, Germany; ordained to the Lutheran ministry 1770, Oct. 25, after which he served as pastor of various congregations in New York, and New Hanover, Oley, and Goschenhoppen, Penn., till 1779, Aug., when he resigned from the ministry, and entered on a political career, having been elected to congress 1779, May. He served in congress twice, 1779–80, and 1789–97; was twice speaker of the house, and twice of the Penn. state legislature.

MUH'LENBERG, Gotthilf Heinrich Ernst, D.D.: 1753, Nov. 17—1815, May 23; b. Trappe, Penn.; son of Heinrich Melchior M. He was educated at Halle, entering the univ. at 10 years of age, and remaining 7 years. After graduation he travelled through Europe, returning to America 1770, and being ordained to the Lutheran ministry, though scarcely 17 years old. After laboring a short time in N. J., he was made assist. pastor of his father's church in Philadelphia 1773; and remained till 1777, when he retired for a time to Trappe because of the British occupying Philadelphia. In 1780 he became pastor of Trinity Lutheran Chh. at Lancaster, and remained till his death there. He was an authority in botany recognized in Europe as well as in America; member of the American Philosophical Soc., and of scientific societies in Germany and in Sweden; and author of several botanical works recognized as standards.

MUH'LENBERG, Heinrich Melchior, D.D.: 1711, Sep. 6—1787, Oct. 7; b. Eimbeck, Hanover, Germany. He went to school at Eimbeck till 12 years old, when his father died, and he helped support the family. Afterward, while teaching in Zellerfeld, he prepared himself for the Univ. of Göttingen, which he entered 1735, remaining 3 years, becoming imbued with the pietism of Spener and Francke. He went to Halle 1738, to finish his theological studies, and at the same time taught in Francke's orphanage. After being ordained he served, 1739–41, as assist. pastor and inspector of the orphanage at Gross-Hennersdorf, Upper Lusatia. He was preparing to go as missionary to India, when, 1741, he received a call from Penn. to come and labor as missionary there, and as pastor of the German congregations at New Hanover, New Providence or Trappe, and Philadelphia. He left London for this field 1742, June 13, on a packet bound for Ga. with provisions for Oglethorpe's colony; reached Charleston, S. C., 1742, Sep. 22, and Philadelphia Nov. 25. He found the German Lutheran Chh. neglected and demoralized; but with his advent a new era began in American Lutheranism. He not only reorganized and strengthened the three congregations of which he was pastor, but extended his labors and influence far beyond, among the thousands of Germans scattered throughout the middle provinces, organizing churches and securing for them competent pastors from Germany. The first thus to come to his aid were the Rev. Peter Brunnholtz and

two students, of whom the first took M.'s place in Philadelphia, while the latter resided at Trappe for the next 16 years. The same year that these arrived, 1745, M. married a daughter of Conrad Weiser, the Indian interpreter of Tulpehocken. By this marriage he had 11 children. Within the next few years the field of his labors extended from New York and the shores of the upper Hudson to the s. confines of Ga. In this region many new churches were founded, and supplied with pastors, chiefly from Halle. In 1748 the first Lutheran church in Philadelphia was dedicated; and M. and his co-workers succeeded in organizing the first synod on the basis of the Lutheran confessions, at the same time cultivating fraternal relations with the many Swedish Lutherans who had lived along the Delaware since 1638, and with whom M. held frequent intercourse, delivering sermons in Latin and in English. He visited and preached to the Germans and Dutch in New York and N. J., 1751–2, and in 1759–60, serving congregations there during the summer months of those years. In 1762 he reorganized the church in Philadelphia on a new basis, and its constitution thenceforward became the model in organizing new congregations. Similarly, he gave a new form of govt. and constitution, in 1774–5, to the churches in Ga., which had become demoralized and much disturbed by dissensions among their pastors and members. All through the Revolution he endured much opposition and some danger because of his devotion to the American cause. In 1776 he removed to Trappe, where his home was, and resided there for the rest of his life, still maintaining, however, a general superintendence over the churches in America, preaching as occasion required, visiting pastors and congregations as a peacemaker, wise counselor, and esteemed spiritual father; at the same time carrying on an extensive correspondence with his brethren in Germany and in this country. The degree of D.D. was given him 1784 by the Univ. of Pennsylvania, three years before his death at Trappe. While holding rigorously to the symbols of Lutheranism, and insisting on the same in all over whom he held jurisdiction or influence, he yet was tempered and softened by the measure of pietism that he had received from Halle. During the war his house was the asylum of fugitives and the rendezvous of beggars of all kinds; he refused shelter, food, and comfort to none. To rare native abilities he had added large learning; and his unusual executive powers did not detract from his thoroughness as a student.

MUH'LENBERG, John Peter Gabriel: 1746, Oct. 1—1807, Oct. 1; b. Trappe, Penn; oldest son of Heinrich Melchior M. He was educated at Halle, Germany, but ran away from the university to join the dragoons. After a year's service his discharge was effected, and he returned to America 1766, and studied theology with his father, being ordained to the Lutheran ministry 1772, and serving as pastor in N. J. and in Woodstock, Va. After the outbreak of the Revolution, Washington, with

whom he was acquainted, induced him to accept the office of col. in the continental army. With his commission in his pocket he preached his farewell sermon, full of eloquent patriotism, and at the words, 'There is a time for all things—a time to preach and a time to pray; but there is also a time to fight, and that time has now come!' he threw off his gown, displaying his military uniform beneath, and read his commission. Nearly 300 of his congregation at once enlisted in his regt., the 8th Va., known as the 'German regt.' He was ordered to the relief of Charleston, S. C.; was in the battle of Sullivan's Island; and after the southern campaign was made brig.gen. 1777. After taking brave part in the battles of Brandywine, Germantown, Monmouth, Stony Point, and Yorktown, he was made maj.gen. In 1774 he had been chairman of the committee of safety; 1776 was a delegate to the state convention; after the war was a member of the Penn. council; 1785 was made vice-pres. of Penn.; and presidential elector 1797. He was in congress 1789–95; and again 1799–1801. In 1801 he was elected U. S. senator, but resigned to serve as supervisor of revenue. In 1803 he was made collector of the port of Philadelphia. His statue has been placed in the capitol at Washington.

MUHLENBERG, *mū'lèn-bėrg*, WILLIAM AUGUSTUS, S.T.D.: 1796, Sep. 16—1877, Apr. 8; b. Philadelphia; great-grandson of Dr. Henry Melchior M. He graduated from the Univ. of Pennsylvania 1814, and was ordained to the Prot. Episc. ministry 1817, when he became assist. rector of Christ Church, Philadelphia. In 1821 he was ordained priest, and became rector of St. James parish, Lancaster, Penn., remaining there till 1828, when he went to Flushing, L. I., and founded the school which in 1838 was turned into St. Paul's College, with M. as pres. till 1846. In 1846 he became rector of the Church of the Holy Communion, New York, the first free Prot. Episc. church in the country. While here he secured the founding of St. Luke's Hospital, of which he was supt. and pastor from its opening, 1859, to his death. The first Prot. Episc. sisterhood in the country was organized by him 1852, the members of which later took charge of the hospital. Still later he succeeded in establishing, 1866, an industrial Christian settlement at St. Johnland, L. I., not far from New York. He labored earnestly for Christian union, and did much in improving the hymnology of his denomination, being himself the author of such popular hymns as 'I would not live alway,' 'Like Noah's weary dove,' etc. His kindness and benevolence made him beloved by all classes, and a personal favorite wherever he went. He was author of a number of works, the best known of which are *Church Poetry, being Portions of the Psalms in Verse, and Hymns Suited to the Festivals and Fasts, from various Authors* (1823); *Christian Education* (1831); *Music of the Church*, written in conjunction with Bp. Wainwright, and *The People's Psalter* (1847); *Letters on Protestant Sisterhoods*

(1853); *Family Prayers* (1861); *St. Johnland: Ideal and Actual* (1867); *'I Would Not Live Alway,' and the Story of the Hymn* (1871); *Evangelical Catholic Papers, Addresses, etc.*, 2 vols. (1875-77).

MUHLHAUSEN, *mül'how-zĕn:* ancient city of Prussia, principality of Eichsfeld, on the Unstrut, 30 m. n.w. of Erfurt. It ranked in the middle ages as an important imperial free city, and is still an active centre of commerce. It has manufactories for linen and woolen goods, starch, anise, and saffron works, and carpet and leather factories. Muhlhausen was deprived of its municipal independence 1803, and made over to Prussia, with which it has since remained incorporated, excepting for a short period during the predominance of French influence in Germany, when, at the suggestion of Napoleon, it was included in the kingdom of Westphalia; but it was restored to Prussia 1813. Pop. 34,000.

MUHL'HAUSEN: town in Upper Alsace. See MULHAUSEN.

MUHL'HEIM. See MULHEIM.

MUIR, *mūr*, JOHN, LL.D., D.C.L., PH.D.: 1810, Feb. 5—1882, Mar. 7; b. Glasgow, Scotland. He was educated at Glasgow Univ., and at the E. India school, Haileybury. 1828-53 he was in the British civil service in India, and had opportunity to pursue his favorite studies of history, antiquities, and the E. Indian languages and dialects, at the same time that he wrote religious tracts in Sanskrit verse. In 1846, he offered a prize of £500 to Cambridge Univ. for the best treatise on the errors of Hindu philosophy, and expounding the principles of Christianity. In 1853, he retired from the service; and 1862 endowed a professorship of Sanskrit and comparative philology at Edinburgh Univ. with £5,000. Christian missionary efforts in India derived much help from him and his labors in furthering the advancement of oriental literature in its bearing on the Christian religion. He contributed largely to the journals of learned societies, and published a learned and useful work in 5 vols. on *Original Sanskrit Texts on the Origin and History of India, their Religion and Institutions.*

MUIR, JOHN, A.M., LL.D.: American naturalist and explorer: b. Dunbar, Scotland, 1838, Apr. 21. He came to America in 1849 with his father, who settled near Fox river, Wis., and cleared a farm; entered the University of Wisconsin when 22; and after graduation in 1864 commenced the lonely journeys through Canada, Eastern and Western United States, the West, and the South, that made him a botanist and a geologist. In 1868, after exploring the Yosemite Valley, he settled there, living alone in his mill and on the mountains for 10 years and making a particular study of glacial traces in the Sierra Nevada. On this subject he wrote letters to the New York *Tribune*, beginning in 1871; he discovered in the

High Sierra 65 residual glaciers. He made his first trip to Alaska in 1879, discovered Glacier Bay, and Muir Glacier, and explored the upper courses of the Yukon and Mackenzie rivers; and in 1880 accompanied the De-Long search expedition to the Arctic. He has written much for periodicals, urging the formation of national parks—both the Sequoia and Yosemite are due to his efforts—and has published *The Mountains of California* (1894); *Our National Parks* (1901).

MUIR, Sir WILLIAM: Scottish Arabic scholar: b. Glasgow, 1819; d. 1905, July 11. He attended lectures at the universities of Edinburgh and Glasgow and at 18 entered the Bengal civil service, where he attained distinction. He was lieutenant-governor of the Northwest Provinces 1868-74, and financial minister to the government of India 1874-6. Returning to England he sat on the Council of India, 1876-85, was elected principal of the University of Edinburgh 1885-1900. He has published: *Life of Mahomet* 1858-61; abridged ed. 1877); *Annals of the Early Caliphate* (1883); *The Koran, Its Composition and Teachings, and the Testimony it Bears to the Holy Scriptures* (1877); *Extracts from the Koran* (1880); *The Early Caliphate and Rise of Islam* (1881); *The Mohammedan Controversy* (1897).

MUKDEN, or MOUKDEN, *môk-dĕn'* (Chinese, *Tungtiēn-foo*, affluent capital): town, cap. of Shing-king or Fingtien, chief province of Manchuria; lat. 41° 50′ 30″ n., long. 123° 37′ e.; on a branch of the river Liao, about 500 m. n.e. of Peking. The town is surrounded by a wall about 10 m. in circumference, including an inner wall 3 m. in circuit inclosing the emperor's summer residence. Great pains have been taken by the emperors to enlarge and beautify this the metropolis of the Manchu race, but with only partial success. The family residence and place of sepulture of the founders of the reigning dynasty is Hingking, about 60 m. e. of Mukden. The emperor Kienlung got fame among his subjects, and made Mukden known abroad, by a poetical eulogy on the city and province, printed in 64 different forms of Chinese writing. In 1631, Mukden became the seat of govt. of the Manchu emperors, and is now the seat of several superior tribunals of a Chinese viceroy of the first rank. Coal and iron are worked in the province. Nineteen leagues from Mukden is its port, called in Europe Newchwang, correctly Yingtze (q.v.), opened recently to foreign commerce. The city suffered greatly during the uprising of the Boxers in 1900, and was used by the Russian army under Kuropatkin as a base of supplies during the Russo-Japanese war, but was captured (1905, Mar.) by the Japanese army in one of the greatest and most remarkable battles of modern history. Mukden is laid out on a regular plan. The main street runs due north and south, and the second best crosses it at right angles, while

parallel to these run a series of alleys. Pop. (1905) 250,000. See MANCHURIA; RUSSO-JAPANESE WAR.

MUKHTAR PASHA (GHAZEE AHMED): Turkish general: b. Brusa, Turkey, 1837. He was educated in the military schools in Brusa and in Constantinople and entered upon a military career. In the campaign of 1860 in Montenegro he played a conspicuous part and thereafter received steady and rapid promotion. He became a full general in 1870 and in 1873 was appointed minister of public works. In the wars of Bosnia, Herzegovina and Montenegro, in which he commanded, he displayed great generalship, gaining 20 victories and never suffering defeat. The campaign of Kars-Erzerum in 1877 went against him and he was defeated by the Russian general Melikoff after a brilliant engagement, for which he received the highest Turkish military title, 'Ghazee.' In 1878, he was made grand master of the Turkish artillery, in which capacity he subdued the Cretan insurrection in that year, and in 1885 was designated to the post of Turkish High Commissioner in Egypt.

MULATTO, n. *mū-lăt'tō* [Sp. *mulato,* of a mixed breed —from *muleto,* a young mule—from L. *mulus,* a mule: F. *mulâtre,* a mulatto]: the offspring of a white and a black person. *Note.*—The offspring of a *mulatto* and a *black* is a *sambo;* of a *mulatto* and a *white,* a *quadroon;* of a *quadroon* and a *white,* a *mustee;* of a *mustee* and a *white,* a *mustee-fino.* See MIXED RACES.

MULBERRY, n. *mŭl'bĕr-rĭ* [Ger. *maulbeere;* Sw. *mulbaer,* the mulberry—from L. *morus;* Gr. *mŏrŏn,* a mulberry, probably so called from the dark purple of the fruit], (*Morus*): genus of trees of nat. order *Moraceæ*—also their berry and fruit; natives of temperate and of hilly tropical regions in Asia and America; with deciduous leaves, unisexual flowers in short, thick spikes, a 4-parted perianth, containing either four stamens or one pistil with two styles, the perianth of the female flowers becoming succulent and closing over the small pericarp, the whole spike coalescing into an aggregate fruit.—The COMMON MULBERRY, or BLACK MULBERRY (*M. nigra*), is a native of middle parts of Asia, but was introduced into s. Europe more than a thousand years ago, and is now almost naturalized there. It is a low tree, much branched, with thick, rough bark, and broad, heart-shaped leaves unequally serrated and very rough. The perianth and stigmas are roughly ciliated, and the fruit is of purplish-black color, with dark red juice, fine aromatic flavor, and subacid sweet taste. The fruit is much esteemed for dessert; an excellent preserve and a pleasant light wine are made of it. The tree often produces its fruit in prodigious quantity. The wood is employed in cabinet-work, but is not of much value. The leaves are sometimes used for feeding silk-worms. The Black Mulberry lives long; trees in England are known to be more than 800

years old. It is propagated by seed, by suckers, by layers, or by cuttings. It thrives best in rich light soil. —The WHITE M. (*M. alba*) is a native of China, and has been there planted from time immemorial for its leaves, the best food for silk-worms; on which account also it has been cultivated in s. Europe since about 1540. In N. America it does not thrive further n. than lat. 43°, being somewhat more impatient of frost than the Black Mulberry. The perianth and stigmas are smooth; the fruit is almost white, and is much less palatable than that of the Black M., though in this respect there is great difference among the many varieties. A roh made

Common Mulberry (*Morus nigra*): fruit, leaf, and female flower.

of it is useful in sore throat. The best variety for feeding silk-worms, on account of its rapid growth and abundant leaves, is that called the PHILIPPINE MULBERRY (*M. multicaulis*). In India, the White M. is treated as a bush, and cut down twice a year; the shoots, stripped of their leaves, being thrown away, though the bark has long been used in China and Japan for making paper. It grows readily from cuttings. The root has considerable repute as a vermifuge.—The RED M. (*M. rubra*), native of N. America, abounding particularly on the lower parts of the Missouri, endures severe frosts much better than either of the preceding, and is therefore preferred for cultivation in parts of Europe: its fruit is deep red, and almost as pleasant as the Black M., while the wood is much more valuable; being fine-grained, strong, adapted even for ship-building. The tree attains a height of 60 ft. or more.—The INDIAN M. (*M. Indica*) has black fruit of delicate flavor, and the leaves are extensively used for feeding silk-worms in China, Cochin-China, and Bengal.—*M. atro-ouroured* has been introduced into India

from China for feeding silk-worms. *M. Mauritiana*, native of Madagascar and Mauritius; *M. celtidifolia* and *M. corylifolia*, Peruvian species; *M. Tatarica*, native of central Asia; *M. lævigata*, the species most common in n. India and *M. Cashmeriana*, native of Cashmere, produce pleasant fruit. *M. dulcis*, native of n. India, is said to be superior in flavor to all others.

The PAPER M. (*Broussonetia papyrifera*) differs from the true mulberries in having the female flowers collected in a globular mass. The tree is of moderate size, or, in cultivation, a bush 6–12 ft. high; with leaves either simple or lobed; native of India, Japan, and the islands of the Pacific Ocean, but now common in pleasure-grounds in Europe and N. America. The islanders of the Pacific cultivate the Paper M. with great care. They make a kind of clothing from the bark, using for this purpose the bark of small branches about an inch in diameter, which they macerate in water, and then scraping off the epidermis, press and beat the moist slips together. The paper also, used in Japan and many parts of the East, is largely made from the bark of the young shoots of this plant, which for this purpose is boiled to a pulp, and treated somewhat as the pulp of rags in Europe. When the shoots are cut, new ones spring up very rapidly.—Silk-worms eat the leaves of the paper mulberry.—The fruit is oslong, of a dark-scarlet color, sweetish, but insipid.

MULCH, n. *mŭlch* or *mŭlsh* [Low. Ger. *molsch*, soft through decay: AS. *molsnad*, decayed; Manx, *molk*, to rot]. half-rotten straw: V. to apply half-rotten straw or leaves to protect the roots of trees and shrubs. MULCH'ING, imp. MULCH'INGS, n. plu. applications of such to the soil. MULCHED, pp. *mŭlcht*.

MULCT, n. *mŭlkt* [L. *mulcta* or *multa*, a fine or penalty in cattle, a fine in money]: a fine; a pecuniary penalty: V. to fine; to punish with fine or forfeiture. MULCT'ING, imp. MULCT'ED, pp. MULCTUARY, a. *mŭlk'tū-ĕr-i*, imposing a pecuniary penalty; punishing with fine or forfeiture.

MULDER, *mŭl'dėr*, GERARD JOHANNES: chemist: 1802 Dec. 27—1880, Apr.; b. Utrecht, Netherlands; son of a physician. After obtaining the degree M.D. at the Univ. of Utrecht 1825, he commenced medical practice at Amsterdam, also teaching botany, and subsequently chemistry, in the medical school; and 1841 was elected prof. of chemistry at the Univ. of Utrecht. He was the discoverer of Proteine (q.v.), which he maintains to be the main ingredient of albumen, fibrine, caseine, etc.; but whose existence as an independent chemical compound is not now generally admitted. He was author of numerous excellent works on physiological and agricultural chemistry, etc. His *Chemistry of Vegetable and Animal Physiology*, and *Chemistry of Wine*, have been translated into English.

MULE, n. *mūl* [L. *mulus*, a mule: It. *mulo*, a mule: F. *mule*, a female mule: supposably connected with Gr. *molos*, labor, and with English *moil*]: offspring of a male ass and a mare (see below); a hybrid; machine used in spinning cotton, so named as being the offspring, so to speak, of the *jenny and water frame* (see SPINNING). MULISH, a. *mūl'ĭsh*, resembling a mule; sullen; obstinate. MUL'ISHLY, ad. *-lĭ*. MUL'ISHNESS, n. *-nĕs*, obstinacy like that of a mule. MULE-LIKE, like a mule. MULETEER, n. *mūl'ĕt-ēr'*, a mule-driver.

MULE: hybrid animal, offspring of the male ass and the mare; much used and valued in many parts of the world as a beast of burden. The ears are long; the head, croup, and tail resemble those of the ass rather than of the horse; but in bulk and stature the M. approaches more nearly to the horse. The M. seems to excel both the ass and the horse in intelligence; it is remarkable for powers of muscular endurance; and its sure-footedness adapts it particularly to mountainous countries. It has been common from very ancient times in many parts of the east; and is much used also in most of the countries around the Mediterranean Sea, and in mountainous parts of S. America. Great care is bestowed on the breeding of mules in Spain and Italy, and those of particular districts are highly esteemed. In ancient times the sons of kings rode on mules, and mules were yoked in chariots. They are still used to draw the carriages of Italian cardinals and other ecclesiastical dignitaries. Both in Spain and in S. America, mules employed to carry burdens are driven in troops, each preceded by an animal—in S. America, usually an old mare—called the *madrina*, or god-mother, to the neck of which a little bell is attached, and the mules follow with the greatest docility. When troops mingle in their halting-places or elsewhere, they are readily separated, as they recognize at once the sound of their own bell.

As in other hybrid animals generally, males are more numerous among mules than females; in the proportion, it is said, of two or three to one. There is no instance on record of offspring produced by two mules; but instances occur, though rarely, of their producing offspring with the horse and with the ass. The M. is far superior in size, strength, and beauty, to the hinny, offspring of the male horse and the female ass.

MULFORD, *mŭl'ford*, ELISHA, LL.D.: 1833, Nov. 19—1885, Dec. 9: clergyman and author: b. Montrose, Penn. He graduated at Yale 1855, studied theology at Andover, Mass.; in New York city; and in Germany, at Halle and Heidelberg; was ordained in the Episc. Church, deacon 1859, and presbyter 1862; served as pastor at Darien, Conn., 1861, and South Orange, N. J., 1861–64; was drawn by his profound tendencies as an original thinker into study and authorship 1864–77, at his early home; and published 1870 a work of great research and masterly reflection, entitled *The Nation, the Foundation of Civil Order*

and Political Life in the United States. The LL.D. degree given him at Yale, 1872, was in recognition of the eminence in political philosophy which this work gave its author. He continued his special studies, but acted as pastor at Friendsville, Penn., 1877-81; and from 1881 filled at Cambridge, Mass., the chair of theology in the Episc. theol. seminary. In 1881, he published *The Republic of God,* containing an ideally broad, spiritual, and undogmatic treatment of Christian doctrine; and he had completed his preparations for other works of importance, when an attack of Bright's disease suddenly cut short his career.

MULGRAVE, *mŭl'grāv,* ISLANDS: archipelago in the Pacific, comprising the groups Brown, Ralick, Radack, Scarborough, and Kingsmill; lat. 3° s.—12° n., 160°—177° e. They are usually included among the Marshall Islands (q.v.). Sometimes the name is used in a restricted sense for the Radack chain.

MÜLHAUSEN, *mül'how-zėn* (Fr. *Mulhouse*): town of Germany, in the imperial territory of Alsace-Lorraine; on a small island between the Ill, and the Rhone and Rhine canal; important station on the Strasburg and Basel railway. It lies in a fertile, well-watered district, and ranks as the most active centre of trade in Upper Alsace; while it is also the seat of a tribunal of commerce, and of various important mercantile and trade unions. Its numerous manufactories produce superior woolen and fine cambric goods, excellent leather, morocco, and carpets; and its printing and dye works for cotton, muslin, wool, and silk fabrics are almost unrivalled for delicacy of colors, and elegance of patterns. Mulhausen has extensive bleaching-works, and is noted for its cotton and woolen stocking manufactories, its breweries and distilleries, starch and straw works; and for its iron-works, in which locomotives and various forms of steam-engines are largely manufactured. These manufactures, with corn, wine, and brandy, are the staples of its extensive trade.

Mülhausen early acquired commercial importance, having been erected into a free imperial city by Rudolph of Hapsburg 1273. By siding with some of the Swiss cantons in the 14th c., it was enabled to maintain a degree of neutrality in the feuds between the empire and France. In 1523, Mülhausen adopted the Reformed faith. It remained a part of the circle of the Upper Rhine till 1798, when it was incorporated with France. It became a town of the German Empire as a result of the war of 1870-1 (see ALSACE). Pop. (1900) 89,118.

MULHEIM-AM-RHEIN, *mül'hīm-âm-rīn:* town in the dist. of Cologne, Prussia, on the right bank of the Rhine, nearly opposite Cologne. It is well-built, has flourishing educational institutions, much industrial prosperity, and brisk trade. It has a rolling-mill, boiler-works, malt

manufactories, dye-works, silk-mills, paper-mills, and oil-works. Pop. 45,000.

MÜLHEIM-AN-DER-RUHR, *mül'hīm-ân-dĕr-rôr:* town in the dist. of Düsseldorf, Prussia; on the Ruhr, 7 m. from Essen, 16 m. n. of Düsseldorf, at intersection of several railways. Its chief industry is iron-working, with many blast-mills, rolling-mills, and foundries: there are also miscellaneous manufactories. Its trade in Ruhr coal is important, receiving and forwarding about 6,000,000 tons annually. Sandstone quarries are near. River-steamers are built here. Mülheim-an-der-Ruhr has a church of the 12th c., and became a town 1508. Pop. 38,250.

MULIEBRITY, n. *mū'lĭ-ĕb'rĭ-tĭ* [L. *mulĭēbris,* pertaining to a woman—from *mulĭĕr,* a woman]: the state of being a woman; womanhood; effeminacy.

MULL, v. *mŭl* [Scot. *mule* or *moot,* to crumble; to *mule in,* to crumble bread into a vessel for being soaked: Icel. *molva;* Low Ger. *mullen,* to rub down, to reduce to powder: F. *molette,* a stone used by painters and apothecaries for grinding colors; *moulleur,* a grinder]: to reduce the strength of by warming and enriching with sugar, spice, etc., as wine or ale: N. a powder formed by pounding the small roots and husks and bark of large madder; dust or rubbish; in *slang,* a failure; a very thin and soft muslin, used for dresses and trimmings, of which various kinds are made. MULL'ING, imp. *-ĭng.* MULLED, pp. *mŭld:* ADJ. sweetened and enriched with spices. MULL'ER, or MULL'AR, n. *-ėr,* a hand-stone for grinding down oil-paint on a slab, or for reducing any substance to powder; a vessel for heating wine over a fire. TO MAKE A MULL, to spoil; to make a botch of a thing. *Note.*—MULLED, as applied to sweetened and spiced ale or wine—thus, *mulled-ale*—is also given as from Eng. *mould,* earth; thus in OE. *muld-ale* or *mold-ale* was literally a funeral ale or banquet. The *mould* was the pulverized earth of the grave: comp. Icel. *mold,* earth, and in plu. *moldar,* a funeral.

MULL, n. *mŭl* [Icel. *muli;* Gael. *maol,* the brow of a mountain]: in *Scot.,* a cape or headland; a snuff-box made of the end of a horn—or may be so named from containing powdered tobacco, and so connected with MULL 1.

MULL, *mŭl:* after the Isle of Skye, the largest of the Inner Hebrides; part of the county of Argyle; bounded w. and s. by the Atlantic, and n.e. by the Sound of Mull. It is triangular in shape, hollowed on the w. side by an inlet of the Atlantic, and deeply indented by sea-lochs, of which the principal are Loch-na-Keal and Loch Scridain. Area about 222,200 statute acres, of which 12,470 are arable. Its surface is mostly occupied by mountains, generally rounded in outline, and rising in Ben More to 3,185 ft. Of its fresh-water lakes, Loch Erisa and Loch

Ba are the chief. Wood abounds in the n.; but, owing to the generally tame outline of the mountains, the great stretches of moorland, and the absence of well-defined valleys, the scenery, except on the coast, is uninteresting. The land under cultivation is chiefly on the shores and at the heads of the lochs. The soil is unusually fertile; but the great humidity of the climate, and the frequency and violence of the gales, render it unfit for agriculture. The land is principally in stock-farms, and great numbers of cattle, sheep, and horses are reared and exported. Chief town, Tobermory (pop. 1,000), in the n.; its harbor is one of the best and safest in the Hebrides. A low-water pier enables steamers to land in any state of the tide. The Sound of Mull, 20 m. long, 2 m. in average breadth, separates the island from the mainland of Argyleshire on the northeast. Pop., exclusive of neighboring islets, 4,711.

MULLANY, *mŭl-lā'nĭ*, James Robert Madison: rear-admiral U. S. navy: 1818, Oct. 26—1887, Sep. 17; b. New York; son of Col. James R. Mullany, quartermaster-general U. S. army. He entered the navy 1832, Jan. 7; was promoted passed midshipman 1838, June 23; lieutenant 1844, Feb. 29; served in the Mexican war; saw much service at sea; 1861, Jan.—Mar., served on frigate *Sabine* at Fort Pickens, and in Apr. and May in command of gunboat *Wyandotte*, assisting to reinforce Fort Pickens Apr. 12; was commissioned commander 1861, Oct. 16; was with Farragut 1864, Aug. 5, in command of the *Oneida* at battle of Mobile Bay, where he lost an arm. 1863, Apr.—Sep., he commanded a division of the W. Gulf squadron. During the war he captured 11 blockade runners with cargoes of great value; and with boats cut out in Galveston harbor two schooners laden with cotton. 1865, May—1868, May, he was ordnance inspector at Brooklyn navy yard, with rank of captain, 1866; commanded sloop *Richmond* in European squadron 1868, Dec.—1871, Nov.; was made commodore 1870, Aug. 15; had charge of Mediterranean squadron 1870, Oct.—1871, Nov., and of navy yard at Philadelphia 1872-4; became rear admiral 1874, June 5, and commanded N. Atlantic squadron till 1876, Feb.; and 1876-1879 was governor of the naval asylum, Philadelphia. He was then retired after 47 years' service.

MULLEIN, n. *mŭl'lĭn* [OF. *mouleine;* F. *molène;* Dan. *mol*, a moth]: wild hedge-plant, whose seed was considered good against moths in clothes, whose leaves are used in infusion for catarrhal affections of the respiratory organs and the bowels, whose flowers are used for poultices, and whose flowers with the peduncle are much used in Germany for a gargle in ulcerated sore throat. The term mullein is applied to the genus of plants *Verbas'cum;* and is often applied to the Common Mullein, *Verbas'cum thapsus*, ord. *Scrophulārĭācĕæ* (q.v.).

MUL'LENS, Joseph, D.D.: 1820-79, July 10; b. London. He was educated at Coward College and London University, where he graduated 1841. Ordained in 1843, he went as missionary of the London Missionary Soc. (Congl.) to Calcutta. After visiting the missions in India and China, he, 1865, returned to England to become assistant secretary of the London society, and after Dr. Tidman, the secretary's death, he took his place as foreign secretary, having had the degree D.D. conferred on him by Williams College, Mass., 1861. In 1868, the same degree was received also from Edinburgh Univ. The London society sent him, 1870, as a delegate to the American Board; and also sent him to visit the mission on Madagascar. In 1875, he directed the organization of a new mission on Lake Tanganyika, in central Africa. Starting to travel into the interior from Zanzibar, he died from disease contracted by exposure and fatigue. He was author of *Twelve Months in Madagascar; A Brief Review of Ten Years' Missionary Labor in India, between 1852 and 1863;* and *London and Calcutta Compared in Their Heathenism, Privileges, and Prospects.*

MÜLLER, Charles Louis: French painter: b. Paris, 1815, Dec. 22; d. there 1892, Jan. 10. He was the pupil of L. Cogniet, Baron Gros, and others in the Ecole des Beaux-Arts, and in 1850 was made director of the manufactory of Gobelin tapestries. His fertility in the production of historic pictures and portraits was amazing. Among them are: *Heliogabalus* (1841); *Primavera* (1846); *May-day; Lady Macbeth;* and his masterpiece, *The Last Victims to the Reign of Terror;* the last two being in the Luxembourg; *Vive l'Empereur* (1855); *Marie Antoinette* (1857); *A Mass During the Reign of Terror* (1863); *The Madness of King Lear* (1875); *Mater Dolorosa* (1877). He executed the frescoes of the Salle d'Etat in the Louvre, and as a painter is more to be commended for clever drawing and composition than for his somewhat flat and mediocre coloring.

MÜLLER, *mül'lĕr,* Friedrich, called 'Maler Müller' or 'Müller the Painter': German artist and poet: b. Kreuznach, 1749, Jan. 13; d. Rome, 1825, Apr. 23. Some of his etchings, animals, compositions in the Flemish style, pastoral scenes, etc., were remarkable for their originality and freedom. He deserves more credit as a poet, for at a time when German poetry had degenerated, Müller helped to give a new impulse to German literature. His best works, *Niobe, Faust,* and *Genevieve,* are characterized by richness, warmth, and elevated delineation of character, though sometimes wild and disconnected.

MÜLLER, Friedrich Max: English philologist: b. Dessau, Germany, 1823, Dec. 6; d. Oxford, 1900, Oct. 28. His father was Wilhelm Müller (q.v.), a famous German lyrist, and his maternal great-grandfather Basedow, the

educational reformer. His bringing up was in his mother's hands, as his father died when the boy was four. He studied in Leipsic at the Nicolaischule; had some thoughts of becoming a musician, but entered the University of Leipsic in 1841, and there, under the leadership of Hermann Brockhaus, devoted himself to Sanskrit, publishing a German version of the *Hitopadésa* in 1844; worked under Bopp in philology and Schelling in philosophy at Berlin for a year; in 1845 went to Paris, where Burnouf suggested to him an edition of the *Rig Veda;* and in 1846 went to England and interested the East India Company in this work, which he undertook at the expense of the company. He was in Paris in 1848, and brought to Palmerston, in London, the first news of Louis Philippe's flight from Paris. In the same year he settled in Oxford, where the *Rig Veda* appeared, with Sayana's commentary, 1849-74. He became deputy Taylorian professor in 1850, and fellow of All Souls' in 1858; but in 1860 was defeated in his candidacy for the chair of Sanskrit by Monier Williams, after a fierce fight on the part of his opponents, who objected partly to his foreign birth and partly to his very free and unorthodox religious views. The result for linguistic science was unfortunate, as it turned Max Müller from the narrow field of Sanskrit, in which he easily outranked his contemporaries, to comparative philology and the science of religion, in which his achievements were less exact and scholarly, to say the least. In 1868, he became professor of comparative philology at Oxford. He was made a privy councillor in 1896. His greatest single work was as editor of the *Sacred Books of the East,* a series of English versions of Oriental scriptures, to which he contributed three volumes. He is possibly even better known as a popularizer of the first principles of linguistic science, so that he became in the lay mind the main exponent of this science, whereas his grasp of its detail was inadequate, and many of the etymologies he advanced showed that he was not conversant with the strict rules of phonetics. But the charm of his style, his general grasp of so large a subject, and his admitted preeminence in Sanskrit, make interesting and valuable, if not absolutely authoritative, reading of *The Science of Language* (1861-3); *Essays on Language and Literature,* and *Biographies of Words* (1888), all of which have passed through new editions. Max Müller's works on mythology and religion also have a higher repute among general readers than with the specialist, but it cannot be denied that they did much good in stimulating research, as the *Sacred Books* did in supplying a field for such research. In this class of writings mention should be made of: the *Essay on Comparative Mythology* (1856); *Introduction to the Science of Religion* (1873); *The Origin and Growth of Religion* (1878); *Natural Religion* (1889); *Physical Religion* (1891); *Anthropo-*

logical Religion (1892); *Theosophy, or Psychological Religion* (1893); the *Essays on Mythology and Folklore* in the 4th volume of *Chips from a German Workshop;* and *Contributions to the Science of Mythology* (1897). His versions from the Sanskrit and the Pâli have been alluded to; *A History of Ancient Sanskrit Literature* (1859), and a *Sanskrit Grammar* also should be mentioned, and it should be borne in mind that it is in this field that the scholar spoke with authority. From his youth Max Müller was interested in philosophy; he wrote an excellent version of Kant's *Critique of Pure Reason* (1881); also *The Science of Thought* (1887), urging that thought was inconceivable without language, and the Oriental studies, *Three Lectures on the Vedânta Philosophy* (1894), and *The Six Systems of Indian Philosophy* (1899). An entirely different side of the man is disclosed by *My Indian Friends* (1899), which shows much of his broad and charming personality; or by *Deutsche Liebe* (1857), a romantic and popular story translated into French, Italian, and Russian, and appearing in English in two versions, one American, unauthorized and very successful, and a later one (1873) by Mrs. Max Müller. He also edited his father's poems (1868), and Scherer's *History of German Literature.* His collected works, including the four volumes of *Chips from a German Workshop* (1867-75), appeared 1898 *et seq.* Consult his own *Auld Lang Syne* (1898), and *My Autobiography* (1901); and his wife's *Life and Letters of Max Müller* (1902).

MÜLLER, George: b. Kroppenstadt, Prussia, 1805, Sep. 27; d. Bristol, England, 1898, Mar. 10. He went to school at Halberstadt, studied the classics with Dr. Nagel, and after 2½ years at the gymnasium at Nordhausen, he entered Halle Univ., at the same time preaching in a Lutheran church. After graduation he went, 1829, Mar., to engage in missionary work in London, under the auspices of the Soc. for Promoting Christianity among the Jews, soon relinquishing his salary, in the belief that God would take care of him without it. He also studied Hebrew and Chaldee at this time. In 1830, he became pastor of a Congl. chapel at Teignmouth; and 1832 at Bristol, still accepting no salary, but only free-will gifts. Here he established free breakfasts for the poor, to whom devotional books were read while eating; these were, however, soon discontinued. In 1833-4, he organized 4 day schools, and the scriptural knowledge institution for helping all kinds of schools, supplying cheap Bibles, and aiding missionary societies. In 1835, he published a project for founding an orphanage for children from 7 to 12 years of age, who were to be kept until able to make their own living. Offers of help being received, the home was opened, 1836, May 18, and by 1837, May, there were two houses, with 64 children, and £1,000 had been received, in aid of the institu-

tion, as he declared without solicitation and in answer to prayer. At the end of this year he published the first part of his *Narrative*. A third house was rented 1838, and 86 orphans cared for; 1842 there were 10 schools and 96 children. In 1845, he began to pray for money to erect a building large enough to harbor all orphans that might be sent him. £10,000 seemed needed for the start, and by 1847, Jan., he had received £9,284 for this purpose, besides current expenses; and by 1850 the house was built, furnished, and filled with 300 orphans. Then he began praying for yet more money, though his annual receipts at this time, 'as the result of prayer to God,' he says, were over £8,000 annually. Additional donations came in rapidly, and in large sums, £3,000 in 1851; £8,100 in 1853; and in autumn of the same year £5,200. These he laid aside until he should have enough to erect another building. He began building 1856, May, by which time he had £29,297 (nearly $150,000), which by 1860, May, had increased to £45,000; so that by 1862, Mar., he had been enabled to build two more houses, thoroughly furnish them, and support in them 700 orphans, making a total of 1,000 that he was taking care of. His 3 houses being full, he prayed for still more funds; and soon built 2 more houses, which also were speedily filled, so that, in 1875, he writes, '2,000 children were lodged, fed, and educated, without a shilling of endowment, without a committee, without organization, by funds drawn from all parts of the world.' Besides the support of these orphans, he at the same time maintained 189 foreign and home missionaries, 122 schools, and distributed 47,413 Bibles, or parts of the Bible, and 3,775,971 tracts and books. His orphanages, built at a cost of £115,000 (about $560,000), are vested in a board of trustees. The inmates, after being educated, are put out to service or apprenticed to learn trades. Müller, besides carrying on this vast enterprise, was also pastor of a church of 900 members. His *Narrative* and other books and pamphlets had an immense sale.

MÜLLER, JOHANN: early German mathematician: 1436-76. See REGIOMONTANUS.

MÜLLER, JOHANNES: one of the most eminent physiologists of the 19th c.: 1801, July 14—1858, Apr. 28; b. Coblentz. He began to study for the Rom. Cath. priesthood; but in 1819 he turned to medical study, taking, 1822, the degree M.D. at Bonn. While a student, he wrote for a prize the treatise *De Respiratione Fœtus* (Leip. 1823). He became, 1824, a tutor; 1826, extraordinary; and 1830, ordinary professor of physiology and anatomy at Bonn; and 1833, succeeded Rudolphi as professor of anatomy at Berlin. His physiological researches were most industrious, and were rewarded by many discoveries, which gave him high reputation in the scientific world. His works are numerous, and many of them occu-

pied with particular topics in zoology and comparative anatomy. Among the most important are: *Zur vergleichenden Physiologie des Gesiehtssinns des Mensehen und der Thiere* (Leip. 1826); *Grundriss der Vorlesungen über die Physiologie* (Bonn 1827); *Grundriss der Vorlesungen über ullgemeine Pathologie* (Bonn 1829); *De Glandularum Seeernentium Structura Penitiori earumque prima Formatione in Homine atque Animalibus* (Leip. 1830); *Ueber die organischen Nerven der erectilen männlichen Geschlechtsorgane*, etc. (Berlin 1835); and *Handbuch der Physiologie des Menschen* (2 vols. 4th ed. Coblenz 1851); 'Manual of the Physiology of Man,' translated into French and English. Müller died of apoplexy at Berlin.—His philosophical co-ordination of principles, and classification of previously unsystematized facts, and his deep thought evolving original and suggestive, yet always cautious, theories, have caused Müller to be called 'the founder of modern physiology.' The most eminent living physiologists of Germany received their training in his school.

MÜL'LER, Johann Gotthard von: 1747, May 4—1830, Mar. 14; b. at Bernhausen, Wurtemberg, near Stuttgart: German engraver. He was educated for the clerical profession, but also attended the Stuttgart Acad. of Fine Arts; studied engraving in Paris 1770, began work there, and was admitted a member of the French Acad. of Fine Arts 1776; returned to Stuttgart, and took charge there, by commission from Duke Charles of Wurtemberg, of a school of art, whose success was great. The number of his engravings was not large, only about 30, but their influence was important. Among the best known are *St. Catharine*, after Leonardo da Vinci; Raphael's *Madonna della Seggiola;* portrait of Louis XVI.; and *Battle of Bunker Hill*, from the painting by Trumbull.

MÜL'LER, Johann von: historian of Switzerland: 1752, Jan. 3—1809, May 29; b. Schaffhausen, where his father was clergyman and rector of the gymnasium. He studied at Göttingen under Heyne, Schlözer, Walch, and others. In 1772, he was appointed professor of Greek at Schaffhausen, and in the same year published his first work, *Bellum Cimbricum* (Zür. 1772). Already he had given his leisure hours to the investigation of Swiss chronicles and documents. He went to Geneva 1774, and became a private tutor, and (1778) delivered a series of lectures on 'Universal History,' afterward published in 24 vols. In 1781, he was called to the Collegium Carolinum at Cassel, as professor of statistics, and a little earlier published Vol. I. of his great work, *Geschichte der Schweizer*. In 1786, he was appointed librarian and councilor of state to the Elector of Mainz; here he finished Vol. II.; his *Darstellung des Fürstenbundes* (Leip. 1787); and *Briefe zweier Domherren* (Frankfürt 1787). In 1792, he went to Vienna, where Emperor Leopold gave

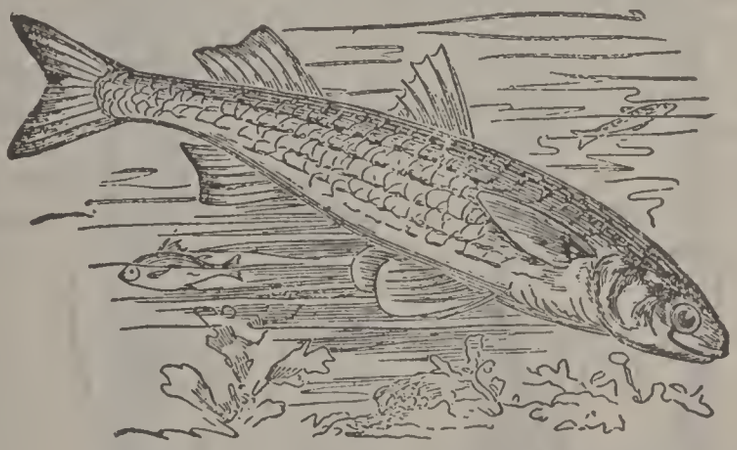
him a situation in the privy council, and 1800 appointed him first imperial librarian. In 1804, he left Vienna for Berlin, where he wrote *Ueber die Geschichte Friedrich's I., Ueber den Untergang der Freiheit der Alten Völker, Versuch über die Zeitrechnungen der Vorwelt,* and an additional volume of his Swiss History. Introduced to Napoleon after the battle of Jena, he was appointed by him (1807)—having been previously dismissed from the Prussian service—secretary of state in the new kingdom of Westphalia. He died at Cassel. Müller's *Sämmtliche Werke* were published, 27 vols. Stuttgart 1810-19; new edition 40 vols. 1831-35. Müller's style is not always clear, nor his historic discernment unerring; but his writings have lasting value from his vigorous grasp and vivid characterization.

MÜL'LER, Julius: German theologian: 1801, Apr. 10 —1878, Oct.; b. Brieg; brother of Karl Otfried Müller (q.v.), the antiquary. He studied at Breslau and Göttingen, at first in law, afterward in theology. After long disquietude of soul and much mental struggle, he came under the influence of Tholuck, whom he visited at a friend's suggestion. Not so much Tholuck's theology impressed him as Tholuck's Christian faith, joyful, deep, calm in its spiritual power and earnest in its Christ-like unselfishness. The result was that Müller adopted religious views opposed to those of the Rationalists. In 1825, he was appointed pastor at Schönbrunn and Rosen, near Strehlen, where he remained seven years. Having acquired high repute for theological learning, he was appointed, 1831, second university preacher in Göttingen, and there lectured on practical theology and pedagogics. The spirit in which he labored may be seen from his sermons, *Das Christliche Leben, seine Kämpfe und seine Vollendung* (The Christian Life, its Struggles and its Perfection; Bresl. 1834; 3d ed. 1847). In 1834, he became extraordinary professor of theology in Göttingen, and soon afterward ordinary professor in Marburg, from which he went 1839 to a similar chair in Halle. The work on which chiefly his reputation as a theologian rests is that on Sin, *Die Christliche Lehre von der Sünde* (Bresl. 1839; 4th ed., revised and much altered, 2 vols., 1858), translated into English, Edin. 1856 (*The Christian Doctrine of Sin*). This is considered by theological critics the most acute and profound treatise of modern times on this mysterious subject. It is in close accord with the theology of the confessions. He afterward published pamphlets on subjects of temporary interest, particularly in vindication of evangelical union against the attacks of the rigid Lutherans. In 1850, in conjunction with Neander and Nitzsch, Müller edited a periodical, *Deutsche Zeitschrift für Christliche Wissenschaft und Christliches Leben.* He also contributed to the *Theol. Studien und Kritiken.* His work, *Die Evangelische Union,* appeared 1854.

MÜL'LER, KARL OTFRIED: genial, richly erudite, and diligent classical archæologist: 1797, Aug. 28—1840, Aug. 1; b. Brieg, Silesia; son of a chaplain in the Prussian army. He received a careful education, studying at Breslau and Berlin. His taste for philological and archæological studies was early developed. The first fruit of his learning was *Aegineticorum Liber* (Berl. 1817), after which he soon received an appointment to the *Magdalenum* in Breslau, where his leisure hours were given to a grand attempt to analyze the whole circle of Greek myths. In 1819, he obtained an archæological chair in Göttingen; and for thorough preparation, visited the collections in Germany, France, and England. His great design was to embrace the whole life of ancient Greece, its art, politics, industry, religion, in one warm and vivid conception—in a word, to cover the skeletons of antiquity with flesh, and to make the dry bones live. With this view, he lectured and wrote with a fine animation, until the political troubles in Hanover made his position uncomfortable. He obtained permission to travel, and made tours in Greece and Italy, but unfortunately died of an intermittent fever at Athens. M.'s literary and scholarly activity stretched over the whole field of Greek antiquity. We are indebted to him for many new and striking elucidations of the geography and topography, literature, grammar, mythology, manners and customs of the ancients. His work on the Dorians (*Die Dorier*, translated into English by Sir George Cornwall Lewis and Henry Tuffnell) forms vols. II. and III. of his *Geschichte Hellen. Stämme und Staaten* (new and improved ed. 3 vols. Bresl. 1844); his treatise *Ueber die Wohnsitze, Abstammung und ältere Geschichte des Macedon. Volks* (Berl. 1825); his *Etrusker* (2 vols. Bresl. 1828); and his maps of Greece, are works of the highest importance in ancient history and ethnology. His *Handbuch der Archäologie der Kunst* (Bresl. 1830, 3d ed. 1846; English by Leitch, London 1850) is full of learning and of acute original observations. His *Prolegomenen zu einer wissenschaftlichen Mythologie* (Gött. 1825) led the way to a strictly historical explanation of the ancient myths. The work by which he is probably best known in England and America is *History of the Literature of Ancient Greece* (Lond. 1840), undertaken at the request of the British 'Soc. for the Diffusion of Useful Knowledge.' M. died before finishing it; what he had finished was translated into English by Sir George Cornwall Lewis and Dr. Donaldson, the latter of whom continued the work from where it was broken off—at the age of Alexander—to the taking of Constantinople. The German original was published by M.'s brother (Bresl. 1841). He showed himself also an acute and judicious critic in his editions of Varro, *Linguâ Latinâ*, Festus, *De Significatione Verborum*, etc. He was brother of Julius M. (q.v.).

MÜL'LER, William James: 1812, June 28—1845, Sep. 8; b. Bristol: English landscape and figure painter. He was educated in natural science, but drawn to art by strong natural bent, he got some primary instruction, studied the early landscape painters, and attempted pictures dealing with the scenery of Wales or Gloucestershire. His work was first seen, 1833, in London, in his *Destruction of Old London Bridge—Morning*, after which he visited Germany, Switzerland, and Italy 1843–4, and four years later Athens and Egypt, making sketches. He settled in London, 1839, showed pictures regularly at the Acad., and found purchasers. In France, 1840, he executed a series of architectural sketches, 25 of which were lithographed and published, 1841, as *Picturesque Sketches of the Age of Francis I.* In 1843 he went for art work to Lycia with a govt. expedition, and brought home remarkable sketches, which greatly increased his reputation and enabled him to execute rapidly several of his most important pictures. He had five of these in the Acad. exhibition 1845, when he retired to Bristol under undue sensitiveness as to the fairness with which his pictures were hung, due largely to his ill-health, an affection of the heart shortly ending his promising career. His collected sketches are in the British Museum print room, and his pictures have commanded great prices. The *Chess Players at Cairo*, executed for £25, has sold for £4,000. A biography by N. N. Solly appeared 1875.

MULLET, n. *mŭl'lĕt* [F. *mulet*—from L. *mullus*, the mullet], (*Mugil*): genus of acanthopterous fishes, type of the family *Mugilidæ*. In this family, the body is nearly cylindrical, the scales are large; there are two widely separated dorsal fins, the first of which has only four stiff sharp spines; the teeth are extremely fine; the gullet is



Common, or Gray Mullet (*Mugil capito*).

closed by an extraordinary development of the pharyngeal bones, so that only soft and thin food can pass down it; a branch of the stomach forms a kind of gizzard. The best known of this family belong to the genus *Mugil*, of which there are many species. They have a small mouth, with a fold or crest in the under lip, which fits into a corresponding notch in the upper one. The Common M., or Gray M. (*M. capito*), is found in the

Mediterranean, and along the w. shores of Europe, as far as the s. and s.e. shores of England, but becomes rare further north. The Common M. is usually about 15 inches in length, but sometimes two ft. The color is steel-gray on the back, with bluish and yellowish reflections; the belly silvery white; the flanks with six or eight longitudinal lines of rosy brown. It ascends rivers, often seeking food by thrusting its mouth into the soft mud. It is taken most readily by a bait of the boiled entrails of fish, or cabbage boiled in broth. It is highly esteemed for the table.—A very nearly allied species, also called GRAY M. (*M. cephalus*), a native of the Mediterranean, is distinguished by having the eyes half covered with an adipose membrane, and by a large triangular scale pointing backward, just over the origin of each pectoral fin. It attains a larger size than the former species, sometimes 10 or 12 lbs. weight. It enters the mouths of rivers at certain seasons, and ascends into the fresh water. It is the most esteemed of all the mullets, and was in great request among the ancients: some writers, however, identify with the M. of the ancients a very different fish, the Red M., genus *Mullus* (see SURMULLET.) Enormous prices were given by the Romans for unusually large mullets, the price increasing, like that of diamonds, far more rapidly than the size. Mullets are used fresh, salted, and smoke-dried. A preparation of their roe, called *Botarcha*, is in great esteem as a condiment in Italy and s. France. Mullets are often caught in the Mediterranean by angling from a rock, with a bait of paste, when they have been previously attracted to the spot by macaroni thrown into the water.—A third species of GRAY M. (*M. chelo*), frequent on the coasts of England, is remarkable for its large fleshy lips. It swims in great shoals. In the Mediterranean, it sometimes attains the weight of 8 lbs.—The AMERICAN M. (*M. albula*) is very like the Common M., but more slender, the tail large and forked. It abounds about the Bahama Islands, and extends far northward. It is highly esteemed for the table.

MULLET, n. *mŭl'lĕt*, or MOLLET [F. *mollette*, the rowel of a spur—from O. It. *mollette*, mullets, fire-tongs—

Mullets.

from *mola*, a spurred wheel—from L. *mola*, a mill]: in *her.*, a charge in the form of a star, generally with five points, intended to represent a spur-rowel, and frequent from the beginnings of coat-armor. The word mullet is occasionally used in heraldry for the fish so called.

MUL'LIDÆ: see SURMULLET.

MULLIGATAWNY, n. *mŭl'ĭ-gă-taw'nĭ* [E. I. name]: a kind of curry soup or stew.

MULLINGAR, *mŭl-ĭn-gâr':* chief town of the county of Westmeath, Ireland; on the great western road from Dublin to Galway, 50 m. n.n.w. from Dublin, with which it is connected by the Royal canal and the Midland Western railway. It is the site of some of the most important horse and cattle fairs in Ireland. Pop. (1871) 5,103, of whom 4,090 were Rom. Cath., and 886 Prot. of the Episc. Church; (1881) 4,787.

MULLINS, *mŭl'ĭnz*, WILLIAM: 1575–1621: one of the Pilgrim Fathers of the *Mayflower*; a leading member of the separatist congregation under the Rev. John Robinson, at Leyden, Holland, 1609–20. He was a man of considerable estate; prominent in the emigration from Holland to America, with wife, son Joseph, daughter Priscilla, and servant, Robert Carter; was the 10th of 41 signers, in the cabin of the *Mayflower*, of the famous 'compact' for the govt. of the colony; one of four (out of 100) who died Feb. 21, at the height of the sickness which carried off 21 of the 41 signers of the compact, and 23 others, including his wife, son, and servant. The sole survivor of the family, Priscilla, became wife of John Alden and, among her descendants were Pres. John Adams, the poet Longfellow, and other notable Americans.

MULLION, n. *mŭl'yŭn* [It. *mugnone*, a carpenter's trunnion: Sp. *muñon;* F. *moignon*, the stump of an arm or

Mullion:
Window from Carlisle Cathedral.

leg after being cut off, the stump of a tree]: one of the upright bars which divide the several lights in a Gothic window frame or screen, being the stump of the division before it breaks off into the tracery of the window

Mullions are rare in Norman architecture, but become more frequent in the Early English style, and in the Decorated and Perpendicular are very common. They have sometimes small shafts attached to them, which carry the tracery of the upper part of the windows. In late domestic architecture, they are usually plain. The fig. show mullions (*a*, *a*) supporting tracery. MULLION, v. to fit with mullions. MULL'IONING, imp. MULLIONED, pp. *mŭl'yŭnd:* ADJ. having mullions. *Note.*—The short upright bars are called *mullions* or *munnions*, and the cross or horizontal ones *transoms*.

MU'LOCK, DINAH MARIA: see CRAIK.

MULREADY, *mŭl'rĕd-ĭ*, WILLIAM, R.A.: 1786, Apr. 30—1863, July 7; b. Ennis, Ireland. When a boy, he went to London with his parents; at the age of 15, entered as a student in the Royal Acad., and made good progress, aiming at first at the classic style, or what, according to the notions of the day, was called high art. He soon relinquished this course, and applied himself to the study of nature and of artists of repute in a less pretentious walk of art. His first pictures were landscapes of limited dimension and subject. He next essayed figure-subjects in every-day life, such as *A Roadside Inn*, *Horses Bailing*, the *Barber's Shop*, and *Punch* (painted in 1812), *Boys Fishing* (1813), *Idle Boys* (1815). M. was elected an associate of the Royal Acad. 1815, Nov., and an academician 1816, Feb.; though the higher dignity is rarely conferred till after a probation of several years as associate. Even his earliest works were characterized by elaboration; but those of middle period exhibit extraordinary finish and greater brilliancy of coloring. Though he lived to a great age, he continued to work with undiminished powers till within a day of his death. A great number of M.'s best works now belong to the public, as portions of the Vernon and Sheepshanks' collections. In the Vernon, there are four pictures, of which, one, *The Last in, or Truant Boy*, exhibited 1835, is one of the most elaborate works of his middle period; while in the Sheepshanks' collection there are 28 of his works, among which, *First Love*, exhibited 1840, is a remarkable example of refinement in drawing, and delicacy of feeling and expression. *The Sonnet*, exhibited 1839, is perhaps his highest effort in point of style; and *The Butt—Shooting a Cherry*, exhibited 1848, best exemplifies the remarkable minuteness of his finish and richness of his coloring. An edition of the *Vicar of Wakefield*, published 1840, by Van Voorst, embellished with 20 wood-cuts from M.'s drawings, is a very fine work. M.'s style as a whole is admirable, but less for its inspiration, than for its elaborateness and accuracy.

MULSE, n. *mŭls* L *mulsus*, mixed with honey—connected with *mel*, honey: comp. Gael. *millse*, sweetness]: wine boiled and mixed with honey.

MULT-, *mŭlt*, or MULTI-, *mŭl'tĭ* [L. *multus*, many]: a prefix in many words which are mostly technical or scientific.

MULTAN, *môl-tân'*, or MOOLTAN: ancient and important city of India, in the Punjab, on a mound consisting of the ruins of ancient cities that occupied the same site, three m. from the left bank of the Chenab—whose inundations sometimes reach M.—and 200 m. s.w. of Lahore. It has railway communication with all principal towns of India—Calcutta, Bombay, Madras, Peshawar, etc. The city is surrounded by a dilapidated wall, 40 to 50 ft. in height. The vicinity abounds in mosques, tombs shrines, etc., attesting alike the antiquity and magnificence of the former cities; and the country around is remarkable for fertility. M. is a military station, with a small redoubt in the rear of the cantonment. Its bazaars are numerous, extensive, and well stocked; and its shops, 6,000 in number, are well supplied with European and Asiatic commodities. There are manufactures of silks, cottons, shawls, scarfs, brocades, tissues, etc., and an extensive banking trade. The merchants of M. are proverbially deemed very rich. Steamers ply between this city and Hyderabad, 570 m.; and the Indus Valley railway opens a commercial outlet from central Asia, the Punjab, and the N. W. Provinces, to the Arabian Sea by Hyderabad and Karachi. In 1849, M. was taken by the British troops under Gen. Whish, and annexed with its territory to the British possessions. Pop. (1868) 56,826; (1881) 68,674.

MULTANGULAR, a. *mŭl-tăng'gū-lĕr* [L. *multus*, many; *angŭlus*, an angle]: having many angles. MULTAN'GULARLY, ad. *-lĭ*.

MULTARTICULATE, a. *mŭl'târ-tĭk'ū-lāt* [L. *multus*, many; *artic'ŭlus*, a joint]: a term applied to the antennæ of insects, and to the legs of crustaceans, etc., when composed of a great many joints; many-jointed.

MULTICAPSULAR, a. *mŭl'tĭ-kăp'sū-lĕr* [L. *multus*, many; *cap'sŭla*, a chest]: having many capsules.

MULTICARINATE, a. *mŭl'tĭ-kăr-ĭ'nāt* [L. *multus*, many; *carīna*, a keel]: a term applied to a shell traversed by many keel-like ridges.

MULTICAVOUS, a. *mŭl'tĭ-kā'vŭs* [L. *multus*, many; *cavus*, hollow]: having many cavities.

MULTICIPITAL, a. *mŭl'tĭ-sĭp'ĭ-tăl* [L. *multus*, many, *caput*, the head]: many-headed.

MULTICOSTATE, a. *mŭl'tĭ-kŏs'tāt* [*multus*, many; *costa*, a rib]: in *bot.*, many-ribbed.

MULTICUSPID, a. *mŭl'tĭ-kŭs'pĭd* [L. *multus*, many; *cuspis* or *cuspĭdem*, a spear]: having several tubercles or points; applied to the rough grinding surfaces of the twelve molar teeth. MULTICUSPIDATI, n. plu. *mŭl'tĭ-kŭspĭ-dā'tĭ*, the molar teeth, twelve in number, six in each jaw; the 'bicuspids' are the smaller or false molars, and are eight in number.

MULTIDENTATE, a. *mŭl'tĭ-dĕn'tāt* [L. *multus,* many; *dens* or *dentem,* a tooth]: armed with many teeth, or teeth-like processes.

MULTIDIGITATE, a. *mŭl'tĭ-dĭj'ĭ-tāt* [L. *multus,* many; *digĭtus,* a finger]: many-fingered; having many fingers, or finger-like processes.

MULTIFARIOUS, a. *mŭl'tĭ-fā'rĭ-ŭs* [L. *multifārĭŭs,* manifold—from *multus,* many]: having many varieties or great diversity; of many and various kinds. MUL'TIFA'RIOUSLY, ad. *-lĭ.* MUL'TIFA'RIOUSNESS, n. *-nĕs,* multiplied diversity.

MULTIFID, a. *mŭl'tĭ-fĭd,* or MULTIFIDOUS, a. *mŭl-tĭf'ĭ-dŭs* [L. *multĭfĭdus,* cleft or split into many parts—from *multus,* many; *findo,* I cleave or divide]: having many clefts or divisions; in *bot.,* applied to a simple leaf divided laterally to about the middle into numerous portions: when the divisions extend deeper, it is called *multipartite.*

MULTIFLOROUS, a. *mŭl'tĭ-flō'rŭs,* or MUL'TIFLO'RAL, a. *-răl* [L. *multus,* many; *flos,* or *florem,* a flower]: having many flowers.

MULTIFOIL, n. *mŭl'tĭ-foyl* [L. *multus,* many; *fŏlĭum,* a leaf]: in *arch.,* a leaf-ornament consisting of more than five divisions or foils.

MULTIFORM, a. *mŭl'tĭ-fawrm,* or MUL'TIFORM'OUS, a. *-fŏrm'ŭs* [L. *multus,* many; *forma,* shape]: having many forms or shapes. MUL'TIFORM'ITY, n. *-ĭ-tĭ,* diversity of forms or shapes.

MULTIGENEROUS, a. *mŭl'tĭ-jĕn'ėr-ŭs* [L. *multus,* many; *genĕrā,* kinds]: having many kinds.

MULTIJUGATE, a. *mŭl-tĭj'û-gāt* [L. *multus,* many; *jugum,* a yoke]: in *bot.,* having many pairs of leaflets.

MULTILATERAL, a. *mŭl'tĭ-lăt'ėr-ăl* [L. *multus,* many; *latĕrā,* sides]: having many, or more than four, sides.

MULTILINEAL, a. *mŭl'tĭ-lĭn'ĕ-ăl,* or MUL'TILIN'EAR, a. *-ē-ėr* [L. *multus,* many; *linĕă,* a line]: having many lines.

MULTILOCULAR, a. *mŭl'tĭ-lŏk'ŭ-lėr* [L. *multus,* many; *loc'ŭlus,* a cell]: having many cells or chambers.

MULTILOQUENT, a. *mŭl-tĭl'ō-kwĕnt* [L. *multus,* many; *loquens* or *loquen'tem,* speaking]: loquacious; containing many words. MULTIL'OQUENCE, n. *-ō-kwĕns,* use of many words; talkativeness.

MULTINOMINAL, a. *mŭl'tĭ-nŏm'ĭ-năl,* or MUL'TINOM'INOUS, a. *-ĭ-nŭs,* [L. *multus,* many; *nomĭnă,* names]: having many names or terms. MUL'TINO'MIAL, a. *-nō'mĭ-ăl,* having many names or terms; in *alg.,* applied to quantities consisting of several names or terms.

MULTIPAROUS, a. *mŭl-tĭp'ă-rŭs* [L. *multus,* many; *părĭō,* I produce]: producing many at a birth; also ap-

plied to a woman who has had many successive pregnancies.

MULTIPARTITE, a. *mŭl-tĭp'ar-tit* [L. *multus*, many; *partītus*, divided]: divided into or having many parts; in *bot.*, deeply divided into several strips or portions.

MULTIPED, n. *mŭl'tĭ-pĕd* [L. *multus*, many; *pedem*, a foot]: an insect that has many feet: ADJ. having many feet.

MULTIPHASE. See ALTERNATING CURRENT DYNAMOS in ELECTRICAL MACHINES.

MULTIPLE, n. *mŭl'tĭ-pl* [F. *multiple*—from L. *mul'tĭ-plex*—from *multus*, many; *plĭcō*, I fold]: a quantity or number which contains another an exact number of times without a remainder—thus 8 is a multiple of 2, and 9 of 3: ADJ. containing many times; numerous. COMMON MULTIPLE, one that is a multiple of two or more numbers—thus, 12, 24, or 36 is a common multiple of 4, 3, and 2. LEAST COMMON MULTIPLE, the least number that will contain other numbers exactly—thus 12 is the least common multiple of 4, 3, and 2. MULTIPLE FRUITS, in *bot.*, masses or aggregations of fruits, springing from several distinct blossoms, united into one body.

MULTIPLE ARC: a term used to express connection of circuits or electrical devices in parallel. See ELECTRICAL DISTRIBUTION.

MULTIPLEX, a. *mŭl'tĭ-plĕks* [L. *multiplex*, that has many folds—from *multus*, many; *plĭcō*, I fold]: in *bot.*, having many folds; having many of the same parts or organs occurring together.

MULTIPLICA'TION: third and most important of the four principal processes of arithmetic; originally a compendious mode of addition, when a number is to be added to itself a given number of times. The three terms of a multiplication are the *multiplicand*, or number to be multiplied; the *multiplier*, or number by which it is to be multiplied; and the *product*, or amount obtained when the multiplicand has been added to itself the number of times denoted by the multiplier. The symbol of multiplication is $\times$; and in arithmetic, the numbers are placed above each other as in addition, with a line drawn under them; in algebra, the quantities are merely placed side by side, with or without a dot between them—e.g., the multiplication of 2 by 4 may be written 2×4; and of *a* by *b*, $a \times b$, *a.b*, or *ab*. For multiplication of fractions, see FRACTIONS.

The operation of multiplication is much abbreviated by the use of Logarithms (q.v.), and has been rendered a mere mechanical process, by the invention of computing machines, arithmometers, the slide rule, etc. In multiplying decimals the terms of higher order are usually rejected where only approximate results are necessary or possible.

MULTIPLY, v. *mŭl'tĭ-plī* [F. *multiplier*—from L. *multiplĭcārĕ*, to make many or numerous—from *multus*, many; *plĭcō*, I fold: It. *multiplicare*]: to increase in number; to make more by addition or natural production; to grow in number; to increase; to perform the process in arithmetic of repeating or adding a number to itself a given number of times. MUL'TIPLYING, imp.: ADJ. increasing. MULTIPLIED, pp. *mŭl'tĭ-plīd*, increased in number; numerous. MUL'TIPLIER, n. *-plī-ĕr*, one who or that which multiplies; the number which shows how often a number is to be multiplied or increased; in *physics*, an instrument for multiplying or increasing the intensity of a force or action by repetition, as by conducting an electric current several times round a magnetic needle. MUL'TIPLI'ABLE, a. *-plī'ă-bl*, or MUL'TIPLICABLE, a. *-plĭ-kă-bl*, that may be multiplied. MUL'TIPLI'ABLENESS, n. *-bl-nĕs*, capacity of being multiplied. MUL'TIPLICAND', n. *-plĭ-kănd'* [L. *multiplican'dus*, requiring to be knit together many times]: in *arith.*, the number to be, or requiring to be, multiplied. MUL'TIPLICATE, a. *-plĭ-kāt* [L. *multiplicātus*, made many or numerous]: consisting of many. MUL'TIPLICA'TION, a. *-kā'shŭn* [F.—L.]: the act or operation of multiplying or increasing a number; in *arith.*, a short operation or process by which a number or quantity is increased any given number of times. MUL'TIPLICA'TIVE, a. *-kā'tĭv*, tending or able to multiply or increase. MUL'TIPLICA'TOR, n. *-kā'tėr*, the number by which another number is multiplied; a multiplier. MUL'TIPLIC'ITY, n. *-plĭs'ĭ-tĭ* [F. *multiplicité*, a multitude]: many of the same kind; the state of being manifold; a great or large number. MULTIPLYING-GLASS, an optical toy by which objects are increased in number to the eye.

MULTIPOLAR, a. *mŭl-tĭp'ō-lėr* [L. *multus*, many; *polus*, a pole, a point]: applied to nerve-cells with many tail-like processes or prolongations.

MULTIPOLAR DYNAMO: a dynamo having more than one pair of magnetic poles in its field frame. See ELECTRICAL MACHINES.

MULTIPOTENT, a. *mŭl-tīp'ō-tent* [L. *mŭltus*, many; *poten'tem*, powerful]: having manifold powers; having power to do many different things.

MULTIPRESENT, a. *mŭl'tĭ-prĕz'ĕnt* [L. *multus*, many; *præsens* or *præsen'tem*, present]: having the power of being present in many places at once. MUL'TIPRES'ENCE, n. *-prĕz'ĕns*, power of being present in more places than one at the same time.

MULTISEPTATE, a. *mŭl'tĭ-sĕp'tāt* [L. *multus; septum*, a hedge]: in *bot.*, having numerous septa or partitions.

MULTISILIQUOUS, a. *mŭl'tĭ-sĭl'ĭ-kwŭs* [L. *multus*, many; *silĭqua*, a pod]: many-podded: applied to plants whose fruits contain many seed-vessels.

MULTITUDE, n. *mŭl'tĭ-tūd* [F. *multitude*—from L. *multitūdĭnem*, a great number—from *multus*, many: It. *multitudine*]: a great number; a crowd; a throng; the populace. MUL'TITU'DINOUS, a. *-tū'dĭ-nŭs*, consisting of a great number; very numerous; manifold. MUL'TITU'DINOUSLY, ad. *-lĭ*.—SYN. of 'multitude': assembly; swarm; assemblage; commonalty; mob; mass.

MULTIVALVE, n. *mŭl'tĭ-vălv* [L. *multus*, many; *valvæ*, valves or folding-doors]: mollusk whose shell is composed of more than two distinct valves or pieces. MUL'TIVAL'VULAR, a. *-văl'vū-lėr*, having many valves as covering pieces.—*Multivalve*, as a term in systems of Conchology (q.v.), has been of primary importance; but since the study of the living animals has led to arrangements very different from those founded on their mere shells, a very subordinate place has been assigned to it, as indicating a distinction much less important than formerly supposed. Thus, Chitons (q.v.), which have multivalve shells, are now placed in the same order of gasteropods with Limpets (q.v.), of which the shells are univalve; and *Pholas* (q.v.) and *Teredo* (q.v.), which have two principal valves and some small accessory valves, the latter also a long shelly tube, are placed among lamellibranchiate mollusks, with most of the bivalves of conchologists. In conchological systems, barnacles and acorn-shells were also generally included, and ranked among multivalves; but these are now no longer referred even to the same division of the animal kingdom. See CIRRIPEDA.

MULTOCA, n. *mŭl-tō'kă* [Turk. *multeka*]: the Turkish code of law.

MULTOCULAR, a. *mŭl-tŏk'ū-lėr* [L. *multus*, many; *oculus*, an eye]: having many eyes, or more than two.

MULTUM, n. *mŭl'tŭm* [L. *multum*, much]: a mixture of the extracts of quassia and licorice, used to adulterate beer.

MULTUM IN PARVO, phrase, *mŭl'tŭm ĭn pâr'vō* [L. much in little]: useful or valuable article in a small space.

MULTUNGULA, n. *mŭl-tŭng'gū-lă* [L. *multus*, many, *ung'gŭla*, a hoof]: the division of the perissodactyle ungulates, which have more than a single hoof on each foot. MULTUNGULATE, a. *mŭl-tŭng'gū-lāt*, having the hoof divided into more than two parts.

MULTURE, n. *mŭl'tūr* [L. *molītūră*, a grinding—from *molo*, I grind]: in *Scot.*, a grinding; in Scotch law, the toll or emolument paid to the miller for grinding; it consists of a quantity of the grain either manufactured or in kind: see THIRLAGE.

MUM, a. *mŭm* [an imitative word; the sound made with the lips closed, being the least articulate sound a person can make]: silent; not speaking: INT. be silent or secret. MUM-BUDGET, int. *-bŭj'ĕt* [F. *bouger*, to move, to budge]: keep silent and concealed; keep secret and silent. MUM-CHANCE, *-chăns* [*chance*, hazard]: a game of chance by players who keep silence.

MUM, n. *mŭm* [Ger. *mumme*, a thick strong beer brewed at Brunswick: prov. Dan. *mœm*, mash for beer]: peculiar kind of beer, formerly used in Britain, and still used in Germany, especially in Brunswick, where it may be regarded almost as the national drink. Instead of only malt being used, it is made of malt and wheat, to which some brewers add oats and bean-meal. It is neither so wholesome nor so agreeable as the common ale or beer.

MUMBLE, v. *mŭm′bl* [Low Ger. *mummelen*, to make the sound *mum mum* in eating or speaking: Dut. *mommelen;* Icel. *mumla*, to mutter]: to speak with the lips partly closed; to suppress or utter imperfectly; to mutter; to chew; to eat with the lips close. MUM′BLING, imp. *-blĭng:* ADJ. uttering with a low imperfect articulation; muttering. MUM′BLED, pp. *-bld:* ADJ. uttered with a low imperfect articulation. MUM′BLER, n. *-blėr*, one who speaks or utters words imperfectly. MUM′BLINGLY, ad. *-lĭ.* MUMBLE-NEWS, in *OE.*, a tale-bearer; one who carries news privately.

MUMM, v. *mŭm* [F. *mommeur;* It. *mommco*, one that goes a-mumming: It. *mommeare*, to mumm: Dut. *momme;* Ger. *mumme*, a masker, a mask, a bugbear: most probably onomatopoetic in origin]: to sport as a masker in silence and disguise, originally in silence; to mask. MUMM′ING, imp.: ADJ. pertaining to the sports of mummers: N. a masked entertainment. MUMMED, pp. *mŭmd.* MUM′MER, n. *-mėr*, one who plays at a theatre in disguise; a masker: a buffoon. MUMMERY, n. *mŭm′mėr-ĭ*, a masquerading; buffoonery; ill-managed acting; hypocritical disguise and parade.

MUMMY, n. *mŭm′mĭ* [F. *mumie*—from Ar. *mumia*, a kind of bitumen—from *mum*, wax: It. *mummia*]: a dead body embalmed after the manner of the anc. Egyptians; a dead body preserved from decay by any means (see EMBALMING); a liquor which distils from mummies; a gum: a sort of wax used in the grafting of trees. TO BEAT TO A MUMMY, to beat soundly. MUMMIFY, v. *mŭm′mĭ-fī* [L. *facĭō*, I make]: to prepare as a mummy by embalming; to make a mummy of. MUM′MIFYING, imp. MUM′MIFIED, pp. *-fīd.* MUM′MIFICA′TION, n. *-kā′shŭn*, the act of making into a mummy. MUMMIFORM, a. *mŭm′mĭ-fawrm* [L. *forma*, shape]: mummy-shaped.

MUMMY-CHOG, n. *mŭm′ĭ-chŏg* [Amer. Indian, *mummachog*]: small fish of the carp kind.

MUM′MY-WHEAT: variety of wheat said to be produced from grains found in an Egyptian mummy. But no good evidence of this origin has been adduced—indeed it is now considered impossible; and the same variety has long been in general cultivation in Egypt and neighboring countries. The spike is compound—a distinguishing character, by which it is readily known, but which is not altogether permanent.

MUMP, v. *mŭmp* [Scot. *mump*, to speak indistinctly, to hint at: Icel. *mumpa*, to eat voraciously: Dut. *mompen*, to mump, to cheat: Swiss, *mumpfeln*, to eat with full mouth]: to bite the lip like a rabbit; to move the lips while closed or almost closed; to make faces as if chewing or nibbling; to nibble; to talk with indistinctness, as if the lips were closed; to make mouths; to beg; to implore with a beggar's look and manner; to whine or sulk; to trick. MUMP'ING, imp.: ADJ. nibbling; begging: N. begging tricks. MUMPED, pp. *mŭmpt*. MUMP'ER, n. *-ẽr*, a beggar. MUMP'ISH, a. *-ĭsh*, sullenly silent; sullen; sour. MUMP'ISHLY, ad. *-lĭ*. MUMP'ISHNESS, n. *-nĕs*, sullen silence; sullenness.

MUMPS: a contagious disease, with inflammation and swelling of the parotid gland. This gland is situated in front of and just below the ear, and the disease must not be confounded with adenitis or inflammation of the submaxillary glands, which are situated below the jaw.

The period of incubation after exposure to a case of mumps is usually about three weeks, and, while the disease is ordinarily one of childhood, yet it frequently affects adults. It is liable to occur during the course of severe fevers, and sometimes during cholera. It often appears as an epidemic, particularly in cold and damp weather, and frequently runs through a school or attacks soldiers in camp, especially the younger men. When occurring in adults it is usually much more severe than when incident to childhood. Only occasionally does it attack the same person twice.

At first there is a feeling of stiffness and soreness on moving the jaw, with some discomfort in eating, which develops into a painful swelling in front and below the ear, interfering with mastication and swallowing, and rendering both actions painful. Usually the gland on one side will become involved first, the inflammation later going to the other. The swelling is usually large enough to cause considerable deformity, with agonizing pain in eating, or even drinking. These symptoms are ushered in and attended by more or less fever and headache.

In favorable cases the inflammation and swelling reach their height in about four days, and at the expiration of ten days the symptoms disappear. During the entire progress of the disease the feeling of lassitude and prostration is often much more severe than would be expected to come simply from an inflamed gland. One reason for this, however, is the fact that the nourishment of the body is largely interfered with. First there is very little, if any, appetite, and then the inability to eat food which requires mastication is the second factor in the loss of strength. This feature is particularly marked when the disease attacks adults.

It frequently happens that the inflammation will somewhat suddenly subside in the parotid glands, and there

will be a metastasis, or shifting of the inflammation to some other organ; in childhood, especially, this may be noticed after exposure to cold. The disease then attacks the mammary gland in the female, and the testicle in the male. Occasionally in severe cases there may be a metastasis to the brain, which it is needless to say is a very serious complication.

The only way to prevent any of these complications is for the patient to avoid all excitement, and as far as possible have complete rest, both physical and mental.

MUN'BY, Arthur Joseph: English poet: b. Bulmer, Yorkshire, England, 1828. He was educated at Trinity College, Cambridge, and was subsequently admitted to the bar of Lincoln's Inn. He has published *Verses Old and New,* which contains the much admired pastoral poem *Doris* (1865); *Dorothy* (1880), which has been widely circulated in the poet's own country and in America; *Vestigia Retrorsum* (*Steps Backward,* 1891); *Vulgar Verses, by Jones Brown* (1891), mostly in dialect; *Susan* (1893).

MUNCH, v. *mŭnsh* [F. *manger;* It. *mangiare,* to eat—from L. *mandūcārĕ,* to chew, to eat]: to chew by great mouthfuls. Munch'ing, imp. Munched, pp. *mŭnsht.* Munch'er, n. *-ėr,* one who munches.

MUNCH, Peter Andreas: Scandinavian historian: b. Christiania, Norway, 1810, Dec. 15; d. Rome, 1863, May 25. He was educated at the University of Christiania, and studied deeply into the old Norse language and antiquities. In 1841, he was appointed professor of history at the University of Christiania. He was accorded the unusual privilege of access to the papal archives in Rome, where he spent much time in study. His principal work is *History of the Norwegian People* (1852-63). Munch published several works of a linguistic character, and, repudiating the term 'Icelandic,' maintained that the so-called Icelandic literature was really Old Norse. He also translated several of the Old Norse sagas. A collection of his essays was edited by Gustav Storm (1873-6).

MUNCH, Peter Andreas: Norwegian poet: b. Christiania, 1811, Oct. 19; d. near Copenhagen, 1884, June 27. He was originally a student of law, but became an editor (1841-6) and professor in the university (1866) at Christiania. Among his writings are: *Sorg og Trost* (*Grief and Consolation*), of which seven editions have been printed; *Ephemera* (1836); *King Sverre's Youth* (1837), a drama; *The Singer* (1838); *Poems Old and New* (1848); *Pictures from North and South* (1848), in prose; *New Poems* (1850); *Lord William Russell* (3d ed. 1888), a tragedy; and *An Evening at Giske* (1855), a historical drama. Munch translated into Norwegian many works from such authors as Tennyson and Walter Scott, and wrote some popular Norwegian songs.

MÜNCHHAUSEN, *müneh'how-zĕn*, HIERONYMUS KARL FRIEDRICH, Baron VON: 1720–97: b. at his family estate of Bodenwerder, Hanover; of an ancient and noble German family. He served as a cavalry officer in the Russian campaigns against the Turks 1737–39. M. attained celebrity by false and absurdly exaggerated tales of his exploits and adventures, so that his name has become proverbial. A collection of his marvellous stories was published first in England under the title, *Baron Münchhausen's Narrative of his Marvellous Travels and Campaigns in Russia* (only 48 pp. Lond. 1785). The compiler was one Rudolf Erich Raspe, an expatriated countryman of Baron M. This Raspe was a man of some talent and erudition, and of doubtful character. A second ed. appeared at Oxford (1786) under the title, *The Singular Travels, Campaigns, Voyages, and Sporting Adventures of Baron Munnikhousen, commonly pronouneed Munehausen; as he relates them over a bottle when surrounded by his friends.* Several other editions rapidly followed. In the same year appeared the first German ed., edited by the poet Bürger, to whom for a time the authorship was mistakenly attributed: the latest ed.—entitled, *Des Freiherrn von Münchhausen wunderbare Reisen und Abenteuer* (1849 and 55)—is enriched by an admirable introduction by Adolf Ellisen, on the origin and sources of the famous book, and on the kind of literary fiction to which it belongs. Ellisen's father knew the splendid old braggart in his latter days, and used to visit him. Nevertheless, though Raspe may have derived many of his narratives from M. himself, he appears to have drawn largely from other sources, especially in making up the mass, three times as large as the original 48 pp., which is comprised in later editions, and is far inferior in quality. Several of the adventures ascribed to the baron are found in older books, particularly in Bebel's *Facetiæ* (Strasb. 1508); others in Castiglione's *Cortegiano* and Bildermann's *Utopia*, which are included in Lange's *Deliciæ Aeademieos* (Heillbronn 1765). M.'s stories still retain popularity, especially with the young.

MUNCIE, *mŭn'sĭ:* city, cap. of Delaware co., Ind.; on the White river, and on the Chicago & S. W., the Lake Erie & W., the Cleveland, C., C. & St. L., the Chicago, I. & E., and the Cincinnati, R. & W. railroads, about 50 m. n.e. of Indianapolis. The city is in an agricultural region and in a natural gas belt, and in the vicinity are coal fields and glass-sand. The chief manufactures are gas engines and gas fixtures, clothing and underwear, iron and steel products, glass, pulp, and paper, flour, wagons and carriages, silver and silver-plated goods, caskets, machine shop, and canning factory products. The city contains the Eastern Indiana Normal University, public and parish schools, library of over 14,000 volumes, government building, courthouse, hospital, churches, banks, etc. The city owns and operates the electric-light plant. Pop. (1900) 20,942; (1910) 24,005.

MUNDANE, a. *mŭn'dān* [L. *mundānus*, belonging to the world, from *mundus*, the world; F. *mondain*]: belonging to the world; earthly; terrestrial. MUN'DANELY, ad. *-lĭ*.

MUNDÉ, *mŭn'dā*, PAUL FORTUNATUS: American gynecologist: b. Dresden, Saxony, 1846, Sep. 7; d. New York 1902, Feb. 7. After coming to the United States in 1849 he attended the Boston Latin school and then studied medicine at Yale. He left before completing his course, entering the Union army as medical cadet in 1864. He was afterward graduated from the Harvard Medical School in 1866, and went to Germany, where he enlisted in the Bavarian army. He was decorated by the emperor with the Iron Cross for heroism in saving the lives of patients from a burning hospital near Paris. After devoting himself to study and practice in hospitals in Berlin, Heidelberg, Paris, London, and Edinburgh, he took up his residence in New York in 1873, and practiced obstetrics and gynecology. He was appointed professor at Dartmouth Medical College, and in the New York Polyclinic in 1882. He edited (1874-92) the *American Journal of Obstetrics*, and was president of the American Gynecological Society in 1897-8. Among his works are: *Obstetric Palpation* (1880); *Minor Surgical Gynecology* (1880); *Appendix to the Midwifery of Cazeaux and Tamier* (1884); *Pregnancy and the Puerperal State* (1887); and *Diseases of Women* (1891).

MUNDOS, *mun'dōs:* heathen tribes living in the wilds of Panay and Cebu, Philippines. Little is known of their race and customs, and the name is a collective one applied to various different tribes.

MUNDT, THEODOR: German author: b. Potsdam, Prussia, 1808, Sep. 19; d. Berlin 1861, Nov. 30. He studied at the University of Berlin, and in 1842 became private docent there. In 1848 he was appointed professor of literature and history at the University of Breslau, and in 1850 was recalled to Berlin as university librarian and professor. He belonged to the 'Young German' school, was a Radical in politics, and favored the emancipation of women. His writings include: *Madonna, Unterhaltung mit einer Heiligen* (1840), a memoir of Charlotte Stieglitz; the novels, *Thomas Münzer, Carmela* (1844); *Mendoza, der Vater der Schelme* (1847); *Die Matadore* (1850); the critical and historical works, *Kunst der deutschen Prosa* (1837); *Geschichte der Gesellschaft; Geschichte der Weltlitteratur; Geschichte der Litteratur der Gegenwart* (1852); and political sketches included in *Pariser Kaiserskizzen* (1856); *Paris und Louis Napoleon* (1858); *Italienische Zustände* (1859-60).

MUNDUNGUS, n. *mŭn-dŭng'gŭs* [may be connected with Sp. *mondongo*, tripes, black-pudding]: in *slang*, ill-flavored tobacco; a thing ill-flavored or stinking.

MUNGER, *mŭng'gẽr*, THEODORE THORNTON, D.D.: born 1830, Mar. 5, Bainbridge, N. Y. In 1851 he graduated from Yale Univ., and 1855 from Yale Theol. Seminary. Ordained as a Congl. minister, he served, 1856–60, as pastor of the village church at Dorchester, Mass.; 1862–70 at Haverhill; and 1870–75 at Lawrence. In the latter year he went to Cal., and after organizing a Congl. church at San José, served it as pastor nearly a year, when he returned to New England, having accepted the call of the Congl. Church at North Adams, Mass., 1876. He served there until 1885, when he accepted a call to the United Congl. Church at New Haven, Conn., where he still is. In 1883 he received the degree D.D. from Illinois College, and was made a fellow of Yale Univ. 1887. His volume *On the Threshold* (1881), being sermons and addresses to young men, and *The Freedom of Faith* (1883), made him known in this country and England as an exceedingly suggestive thinker and a most graceful writer, and a leader of advanced and liberal, though fully evangelical, thought in theology. He published also *Lamps and Paths* (1885), and *The Appeal to Life* (1887).

MUNGO, n. *mŭng'gō:* woolen cloth manufactured from the rags of fine woolen goods or cast-off clothing: *shoddy* is the material from rags of coarser goods.

MUNGO, *mŭng'gō*, SAINT: popular name of St. Kentigern, one of the three great missionaries of the Christian faith in Scotland: abt. 516—abt. 603; b. (according to tradition) at Culross, on the Forth, the site of a monastery then ruled by St. Serf, of whom St. M. or Kentigern became the favorite disciple. It is said, indeed, that he was so generally beloved by the monastic brethren, that his baptismal name of Kentigern or Cyndeyrn, 'chief lord,' was exchanged in common speech for Mungo or Munghu, 'dear friend.' St. Ninian (q.v.) converted the tribes of the s.; St. Columba (q.v.) was the apostle of the w. and n.; St. M. or Kentigern restored or established the religion of the Welsh or British people, who held the country between the Clyde on the n. and the furthest boundaries of Cumberland on the s. (see BRETTS AND SCOTS). He is said to have been son of a British prince, Owen ab Urien Rheged, and of a British princess, Dwynwen or Thenaw, daughter of Llewddyn Lueddog of Dinas Eiddyn, or Edinburgh; but these points have the authority of only doubtful tradition. Leaving Culross, he planted a monastery at a place then called Cathures, now Glasgow, and became bishop of the kingdom of Cumbria (q.v.). The nation seems to have been only partially converted from paganism, and the accession of a new king drove St. Kentigern from the realm. He found refuge among the kindred people of Wales, and there, on the banks of another Clyde, he founded another monastery and a bishopric, which still bears the name of his disciple, St. Asaph. Recalled to Glasgow by a new king, Rydderech or Roderick the Bountiful, St. Kentigern renewed his missionary labors, in wh he was cheered by

a visit from St. Columba; and dying, was buried where the Cathedral of Glasgow now stands. His life has been often written. A fragment of a memoir, composed at the desire of Herbert, bp. of Glasgow, between 1147 and 64, has been printed by Cosmo Innes in the *Registrum Episcopatus Glasguensis*. The longer life by Joceline of Furness, written about 1180, was published by Pinkerton in *Vitæ Antiquæ Sanctorum Scotiæ*. It refers to two still older lives. The fame of St. Kentigern is attested by the many churches which still bear his name, in Scotland and in n. England. The church of Crosthwaite, where Southey is buried, is dedicated to him. The miracles which he was believed to have wrought were so deeply rooted in the popular mind, that some of them sprang up again in the 18th c. to grace the legends of the Cameronian martyrs. Others are still commemorated by the armorial ensigns of the city of Glasgow—a hazel-tree whose frozen branches he kindled into a flame, a tame robin which he restored to life, a hand-bell which he brought from Rome, a salmon which rescued from the depths of the Clyde the lost ring of the frail queen of Cadyow. Nor is it St. M. only whose memory survives at Glasgow; the parish church of 'St. Enoch' commemorates his mother, St. Thenaw; and it is not many years since a neighboring spring, which still bears her name, ceased to be an object of occasional pilgrimage.

MUNGOOS, or MONGOOSE, n. *mŭn'gûs:* an animal of the civet kind, useful in India, etc., for destroying snakes and vipers; the ichneumon: see ICHNEUMON (*Herpestes*).

MUNGREL, a. *mŭng'grĕl:* see MONGREL.

MUNI: Sanskrit title, denoting a holy sage; applied to a great number of distinguished personages, supposed to have acquired, by dint of austerities, more or less divine faculties.

MUNICH, *mū'nĭk* (Ger. *München, mün'chĕn*): city, cap. of Bavaria, third largest town in the German empire; 48° 8′ n. lat., 11° 35′ e. long.; on the left bank of the Isar, the midst of a barren and elevated plain, about 1,700 ft. above sea-level. Pop. (1875) 193,024; (1880) 230,023, about 90 per cent. Rom. Catholics, 9 per cent. Protestants, 1 per cent. Jews; (1890) 344,890; (1900) 499,932.

M. consists, in addition to the old town, of five suburbs, and of the three contiguous districts, Au, Haidhausen, and Obergiesing. By the efforts of King Ludwig I., who spent nearly 7,000,000 thalers (nearly $5,200,000) on the improvements of the city, M. has been decorated with buildings of almost every style of architecture, and enriched with a larger and more valuable collection of art-treasures than any other city of Germany. It possesses 42 churches, of which all but two or three are Rom. Cath. Of these the most notable are: the cathedral, which is the see for the archbishopric of Munich-Freising, built 1468–94, remarkable for its two square towers, with their octagonal upper stories, capped by cupolas, and its 30 lofty and highly decorated windows; the church

of the Jesuits, or St. Michael's, which contains a monument by Thorwaldsen to Eugene Beauharnais; the Theatiner Kirche, completed 1767, and containing the burying-vaults of the royal family; the beautiful modern Church of St. Mariahilf, with gorgeous painted glass and exquisite wood-carvings; the round church, or Basilica of St. Boniface, with its dome resting on 64 monoliths of gray Tyrolean marble, and resplendent with gold, frescoes, and noble works of art; the cruciform-shaped Ludwigs Kirche, embellished with Cornelius's fresco of the Last Judgment; and the Court Chapel of All Saints, a casket of art-treasures. Among the numerous public buildings, whose description would fill a volume, are: the theatre, largest in Germany, accommodating 2,400 spectators; post-office; Ruhmeshalle; new palace, including the older royal residence, the treasury and chapel, antiquarian collections, etc.; and the Königsbau, designed by Klenze, in imitation of the Pitti Palace, and built at a cost of 1,250,000 thalers (more than $925,000), containing J. Schnorr's frescoes of the Nibelungen; the Banqueting Halls, rich in sculpture by Schwanthaler, and in grand fresco and other paintings. In the still incomplete suburb of Maximilian are the old Pinakothek, or picture-gallery, erected 1836 by Klenze, containing 300,000 engravings, 9,000 drawings, a collection of Etruscan remains, etc.; and immediately opposite, the new Pinakothek, completed 1853, containing the works of recent artists; the Glyptothek, with its 12 galleries of ancient sculpture, and its noble collection of the works of the great modern sculptors, e.g., Canova, Thorwaldsen, Schadow, etc. Among the gates of M., the most beautiful are the Siegesthor ('Gate of Victory'), designed after Constantine's triumphal arch in the Forum, and the Isarthor with its elaborate frescoes. In addition to these and many other buildings intended either solely for adornment of the city, or as depositories for works of art, M. possesses numerous scientific, literary, and benevolent institutions, remarkable alike for the architectural and artistic beauty of their external appearance, and the liberal spirit of their organization and management. Since 1882, the well-known *Allgemeine Zeitung*, formerly of Augsburg, is published at M. The library, enriched by the biblical treasures of numerous suppressed monasteries, contains about 800,000 vols., of which 1,300 are incunabula, with nearly 22,000 MSS. The university, with which that of Landshut was incorporated 1826, comprises 5 faculties, and has a staff of more than 130 professors and teachers, and more than 1,300 students. In association with it are numerous medical and other schools, a library of 200,000 vols., and various museums and cabinets. M. has a well-manned observatory, supplied with first-rate instruments by Fraunhofer and Reichenbach; 3 gymnasia; numerous Latin, normal, military, professional, polytechnic, and elementary schools, of which the majority are Rom. Cath.; institutions for the blind, deaf and dumb, and crippled, and for female orphans, besides numerous

hospitals, asylums, infant schools, etc.; an acad. of sciences; royal academies of painting, sculpture, music, etc.; a botanic garden, parks, public walks, and gardens, adorned with historic, patriotic, and other monuments, and designed for annual and other national fairs and festivals; spacious cemeteries, etc. M. is indebted mainly to Ludwig I. for its celebrity as a seat of the fine arts, as the greater number of the buildings for which it is now famed were erected 1820–50, though, under his successors, Maximilian II., and Ludwig II. (ascended the throne 1864), the embellishment of the city was continued on an equally liberal scale. M. is somewhat behind many smaller towns of Germany in regard to literary movement and freedom of speculation, while its industrial activity also is inferior to its state of high artistic development. Among its industrial establishments, however, are eminently good iron, bronze, and bell foundries; and it is famed for its lithographers and engravers, and its optical, mathematical, and mechanical instrument-makers, among whom Utzschneider, Fraunhofer, and Ertl have acquired world-wide renown. M. is noted for enormous breweries of *Bavarian beer*, and has some good manufactories of cotton, wool, and damask goods, wax-cloth, leather, paper-hangings, carriages, pianos, gold, silver, and steel wares, etc.

The present name of this city cannot be traced further back than the 12th c., when Henry the Lion raised the *Villæ Munichen* from its previous obscurity, by establishing a mint within its precincts, and making it the chief emporium for the salt obtained from Halle and the neighboring districts. In the 13th c., the dukes of the Wittelsbach dynasty selected M. for their residence, built the Ludwigsburg, some parts of whose original structure still remain, and surrounded the town with walls and other fortified defenses. In 1327, the old town was nearly destroyed by fire, and rebuilt by Emperor Ludwig of Bavaria very much on the present plan; but it was not till the close of the 18th c., when the fortifications were razed to the ground, that the limits of the town were enlarged to any extent. The last 60 years indeed comprise the true history of M., since within that period all its finest buildings have been erected, its character as a focus of artistic activity has been developed, its population has been more than doubled, and its material prosperity augmented in proportionate degree.

MUNICIPAL, a. *mū-nĭs′ĭ-păl* [F. *municipal*—from L. *municĭpālis*, of or belonging to a free town—from *municĭp′ĭŭm*, a town or city, other than a Roman city, whose citizens possessed the privileges of Roman citizenship; a free town: It. *municipale*]: pert. to a city, corporation, or state. MUNIC′IPALLY, ad. *-lĭ*. MUNIC′IPAL′ITY, n. *-păl′ĭ-tĭ*, the corporation of a city (see below); a small territorial district; a ward or district.

MUNCIPAL ARCHITECTURE.

MUNICIPAL ARCHITECTURE: style of the buildings used for municipal purposes, such as town-halls, guild-halls, etc.; a subject interesting as illustrative of the historic growth of constructive art. Such buildings were used first when the towns of the middle ages rose in importance, and asserted their freedom. Those of n. Italy and Belgium were the first to move; consequently in these countries are the earliest and most important specimens of municipal architecture during the middle ages. It is only in the 'free cities' of that epoch that town-halls are found. We therefore look for them in vain in France or England till the development of industry and knowledge had made the citizens of the large towns so wealthy and important as to enable them to raise the municipal power into an institution. When this became the case in the 15th and 16th c., these countries produced abundant instances of buildings for the use of the guilds and corporations and the municipal courts. Many of these still remain, as do the corporate bodies to which they belong, especially in London, where many of the halls are of great magnificence. Many of these corporation halls have recently been rebuilt by the wealthy bodies to which they belong, such as the Fishmongers, Merchant Taylors, Goldsmiths, and other companies. Municipal buildings on a large scale for the use of the town councils and magistrates have also been recently erected in many large towns in Britain which had quite outgrown their original modest buildings.

Municipal buildings always partake of the architectural style of the period when they are erected; thus, in Italy they are of the Italian-Gothic style in Como, Padua, Vicenza, Venice, Florence, etc., during the 13th, 14th, and 15th c. In Belgium, during the same period, they are of northern Gothic, and are almost the only really fine specimens of the civil architecture of the middle ages that we possess. The Cloth-hall at Ypres, and the town-halls of Brussels, Louvain, Bruges, Oudenarde, etc., the Exchange at Antwerp, and many other markets, lodges, halls, etc., testify to the early importance of the municipal institutions in Belgium.

It is a curious fact, that in France, where the towns became of considerable importance during the middle ages, so few municipal buildings remain. This arises from the fact, that the resources of the early municipalities of France were devoted to aid the bishops in the erection of the great French cathedrals, and the townspeople used these cathedrals as their halls of assembly, and even for such purposes as masques and amusements.

Of the English corporation halls, nearly all those which remain are subsequent to the 14th c., from which time to the present there are very many examples. The Guild-hall of London is one of the earliest: the present building was begun 1411, and was built chiefly by contributions from the trades 'companies' of London. Of the town-halls recently erected, those of Manchester, Liverpool, and Leeds are among the most important.

MUNICIPALITY, or Municipal Corporation [L. *municeps*—from *munus* and *capio*—one who enjoys the rights of a free citizen]: town or city possessed of certain privileges of local self-government; the governing body in such a town. Municipal institutions originated in the times of the Roman empire. The provincial towns of Italy, which were from the first Roman colonies, as also those which, after having an independent existence, became members of the Roman state, though subjected to the rule of an imperial governor, were allowed a right of regulating their internal affairs. A class of the inhabitants called the *curia*, or *decuriones*, elected two officers, called *duumviri*, whose functions were supposed to be analogous to those of the consuls of the imperial city, and who exercised a limited jurisdiction, civil and criminal. There was an important functionary in every municipality called the *defensor civitatis*, or advocate for the city, the protector of the citizens against arbitrary acts on the part of the imperial governor. In the later ages of the empire, the Decurions were subject to heavy burdens not compensated by the honor of the position, which led many to shun the office. The municipal system declined with the decline of the empire, yet it retained vitality enough to be resuscitated in union with feudalism, and with the Saxon institutions of Britain. Some cities of Italy, France, and Germany have indeed derived their present magistracy by direct succession from the days of imperial Rome, as is notably the case with Cologne. The bishop being a shield between the conquerors and the conquered, in many cases discharged the duties or obtained the functions of the *defensor civitatis*. North of the Alps, under the feudal system, he became officially the civil governor of the city, as the count was of the rural district. In s. Europe, where feudalism was less vigorous, the municipalities retained a large share of freedom and self-government.

Of the cities of the middle ages, some were entirely free; they had, like the provincial towns of Italy before the extension of the Roman conquests, a constitution independent of any other powers. Venice, Genoa, Florence, Hamburg, and Lübeck, all stood in this position. Next in dignity were the free imperial cities in Germany, which, not being comprehended in the dominions of any of the princes, were in immediate dependence on the empire. Most of these cities rose into importance in the 13th c.; and their liberties and privileges were fostered by the Franconian emperors, to afford some counterpoise to the growing power of the immediate nobility. Nürnberg was especially celebrated for its stout resistance to the House of Brandenburg, and the successful war which it waged with the Franconian nobility. In England, the more important cities were immediate vassals of the crown; the smaller municipalities sometimes owned a subject superior, sometimes a greater municipality for their overlord.

Under the Anglo-Saxons, the English burghs were

subject to the rule of an elective officer, the 'Portreve,' who exercised in burgh functions similar to those of the shire-reve in the shire. The Norman conquerors recognized the already existing privileges of the towns by granting them charters. Instead of a shire-reve, a viscount was placed by the king over each shire, and a bailiff instead of the former elective officer over each burgh. In the larger towns, the bailiff was allowed to assume the Norman appellation Mayor. The municipal franchise seems to have been vested in all the resident and trading inhabitants, who shared in the payment of the local taxes and performance of local duties. Titles to freedom were recognized also on the grounds of birth, apprenticeship, marriage, and sometimes free gift.

In all the larger towns the trading population came to be divided into guilds or trading companies, through membership of which companies admission was obtained to the franchise. Eventually the whole community was enrolled in one or other of the guilds, each of which had its property, its by-laws, and its common hall; and the community elected the chief officers. It was on the wealthier and more influential inhabitants that municipal offices were generally conferred; and the practice gradually gained ground of these functionaries perpetuating their authority without appealing to the popular suffrage. Contentions and disputes arose regarding the right of election, and eventually the crown threw the weight of its influence into the scale of self-elective ruling bodies. As the greater municipalities grew in strength, we find their right recognized to appear in parliament by means of representatives. The sheriffs were considered to have discretionary power to determine which towns should, and which should not have this privilege of representation. The sovereigns of the House of Tudor and Stuart acquired the habit of extending the right of parliamentary representation to burghs not in the enjoyment of it, while by granting or renewing to them municipal charters, they modelled the constitution of these burghs to a self-elective type, and restricted the right of voting in the choice of a representative to the governing body. During the reign of William III., Anne, and the earlier Georges, the influence of the crown was largely employed in calling new municipal corporations into existence, with the view of creating additional parliamentary support for the ministry in power. The burghs of Scotland had a history much like that of the burghs of England; their earlier charters were mere recognitions of already existing rights, and were granted to the inhabitants at large. In the 14th and 15th c. the municipal suffrage fell gradually more and more into the hands of restricted bodies of men, until act 1469, c. 5, gave to the councils the right of appointing their successors, the old and new council together electing the office-bearers of the corporation. This state of things continued till 1833, not without much complaint. In the Scottish burghs the several trades possessed a much more exclusive

monopoly than in England. With the outcry for parliamentary reform arose an outcry for municipal reform; and a separate municipal reform act putting an end to the close system was passed for each part of the empire. The English act (5 and 6 Will. IV. c. 76), entitled 'An act to provide for the regulation of municipal corporations in England,' conferred the franchise on the owners and occupiers of property within burgh, with certain qualifications as to property, residence, etc. This constituency elected the councilors, and from the body of the councilors the mayor and aldermen were chosen Act 32 and 33 Vict. c. 55, limited the requisite period of residence to one year's occupation, and the ballot was introduced by 35 and 36 Vict. c. 33, in municipal as in parliamentary elections. Act 3 and 4 Will. IV. made an entire change in the mode of electing councils in Scottish burghs which already had a council, and conferred councils on burghs which had none. A vote was given to every one who had resided six months in the burgh, or within seven miles of it, and possessed the requisite qualification to exercise the parliamentary franchise: a property qualification similar to that which conferred the parliamentary franchise being required in burghs that did not send or contribute to send a member to parliament. The Municipal Elections Amendment Act (Scotland) 1868, has placed the municipal franchise in the hands of all registered voters to return a member of parliament, and in the case of burghs not represented in parliament, in the hands of all persons possessing similar property qualifications: and act 33 and 34 Vict. c. 92, has provided for the establishment of a municipal register in burghs not represented in parliament. An exemption, under 3 and 4 Will. IV. c. 76, of nine small burghs from the operation of the new system has been done away with. Town-councilors must be electors residing in or carrying on business in the burgh. They remain in office three years, and elect from their own number the provost and bailies. The English act of Will. IV. abolished the exclusive privileges of the guilds, but these monopolies continued in Scotland till 1839, when they were swept away. The Irish municipal system, which had been imported ready-made from England, was assimilated to the altered English system by 3 and 4 Vict. c. 108.

City, town, and village corporations, in the United States, exist to carry out the principle of local or home rule which the states, for much larger areas, represent, in distinction from, and subordination to, the national. Local concerns are subjected to the municipal govt.; but it rests with the state to determine what matters come properly under the town government, and to fix the general principles under which that charge must be executed. There is no absolute authority of the town or city, which it can maintain regardless of the authority of the state. The city is created by, holds of, and is subject to, the state, in everything not violating

the fundamental constitution of the state. The state gives cities their charters, their special privileges, and it may take these away on occasion, grounding its action in the principles of the state or its constitution and general purpose. The contention that a city may by municipal action create a situation in the nature of vested rights, beyond the authority of the state to disturb—a special investment, e.g., in property appropriated to public use—is a contention not admitted by sound authority in municipal law. The more judicious construction of the city's relation to the state is, that it is the trustee and instrument of the state, subject, however, to the city's absolute right to expect of the state the recognition of principles, such as the inviolability of contracts, which are invariably and absolutely obligatory on the state itself. The power of the state to direct a special demand for taxes to a particular locality, though superficially questionable, and perhaps expressly denied in the constitution of a state, is in the absence of such prohibition a power that can be exercised within the limits of generally admissible taxation. The creation of any corporation, city, town, or village, may be by special statute in each case, as has been common, or by local proceedings under a general law, as is now the case in many states; and in either case the charter defines limits, specifies purposes and powers, indicates or implies the methods and manner of corporate action, and provides that the consent of the voters shall be given to the organization.

A general fact in the history of cities, and kindred local corporations, in the states of the Union, has been the disposition of municipal organizations to grant valuable franchises, or actual advances of money, in aid of interests supposed to be of great public importance, such as the building of railroads, and to do this by incurring heavy municipal indebtedness. In some instances state laws have provided a general sanction for such municipal operations, and in others each operation of the kind has secured the authorization of a special legislative act. The question whether cities have by corporate principles a right to proceed in such matters under their general powers, turns on the inquiry how clearly and distinctly the interest which the city proposes to aid is the public interest. It does not fall within any usual grant of corporate powers that there should be authority to vote money in aid of railroads, or for public entertainments and festivities not of and for public business. Yet the admitted principle is that roads of every kind are a public interest, and may receive municipal support by money raised for the public purposes; while yet it would not be permitted to so use public money in aid of any private enterprises, no matter how much value these may have to a community. Experience, however, has created strong distrust of schemes in aid of railroads, and this distrust has shown itself in constitutional or statute prohibition of action by cities in this direction. In other

particulars current opinion, expressed in various ways, tends to restraint of the power of cities to proceed freely in the use of the public money under any but very plain dictates of public necessity and good business judgment.

Legislatures may confer specific powers upon municipal corporations, by either special or general laws. Experience of special laws, each dealing with an individual case, has suggested the wisdom and justice of granting privileges as much as possible under general laws, as more equal and less open to abuse. This fruit of experience is adopted in state constitutions, and it especially serves to enable the integrity and sobriety of a state to restrain the rashness or corruption of large centres of population. In the same direction are the metropolitan extensions of cities to cover a larger field, and the use of a state constabulary where otherwise the city alone would make police arrangements.

The extent to which important proposals of public action are brought directly under the consideration of all the citizens, or are acted on only by representatives elected for the purpose, commonly follows the line of distinction between towns and cities, or small places and large ones, the former acting by town meeting and the latter by councils, mayor, or other elected representatives. In the latter case the by-laws of the corporation become ordinances of great importance, administered by appropriate municipal courts. The enforcement of such ordinances beyond a pecuniary fine, requires express legislative authority. Questions of the contracts which may be made, bonds which may be issued and sold, the power of the corporation to control the streets, make assessments and lay taxes, take property on nonpayment, and other acts incidental to corporate care of the common interest, are subjects forming an elaborate system of municipal law, calling for the service of a corporation counsel.

The American system of law rests on either express or tacit recognition of the continuing validity of considerable parts of the English law, whether common or statute, by which the early settlers found it convenient to govern themselves. The states are the units of this common law of America, and in the single case of Louisiana the basis is the civil law of Spain with some modifications. Different states may reach, through their supreme courts, conclusions, in view of any particular class of facts, opposed to each other, but these for each state are final, unless the matter in question falls under the interpretation of the U. S. constitution and laws. General customs and particular customs both are recognized in the municipal administration of common law. And beyond this, the law inserted in state constitutions or enacted by statutes of legislatures, is of the first importance. If inserted in the constitution, even the legislature cannot set it aside, and it overrules any conflicting custom of the common law, as also a properly passed statute does. The tendency of growth in the

U. S. is to one order and law for all municipalities, distinctly representing state control, the states in the same manner accepting one order and law representing U. S. control, while yet every part of the complex system rests on the free and intelligent consent of the people, whether as nation, state, or city, town, village.

'The village or township,' it has been said by an acute foreign observer, 'is the only association which is so perfectly natural that, wherever a number of men are collected, it seems to constitute itself.' But, it becomes, as in the United States, the basis and primary school of free government only when it has been developed in all its powers by free, intelligent people. New England has been the scene of its freest development. There its origin had much to do with an ecclesiastical system (Congl.) of local independence, and of self-government by the assembled church-members. In old England, municipal privilege belongs only to chartered corporations; and, in this country, there are city corporations, the community and its interests being too large for the township system—excepting many western villages which aspire to the name and organization of cities. The New England township system is marked by the absence of a representative assembly, such as a council or board of aldermen; it does not invest any one man, like a mayor, with superior authority; the whole body of voters meet together to discuss every question of township interest, to elect all township officers, to vote specific appropriations, and to prescribe measures in detail. The selectmen are the chief executive officers chosen, but the administration is wisely diffused by the appointment of many other officers, such as assessors, collectors, treasurer, town-clerk, constables, school committee, overseers of the poor, surveyors of highways, fire-wardens, fence-viewers, pound-masters, weighers and measurers, etc. The people thus hold in their own hands all that pertains to their local interests, and, moreover, this self-government is an education on a small scale for the larger citizenship in state and nation. 'In France, the national government lends its agents to the *commune;* in America it is the reverse. In France, the state collector receives the local imposts; in America, the town [or county] collector receives the taxes of the state.'—*De Tocqueville.* The town delegates to the county the affairs which need the co-operation of a number of towns, and other matters to the state,—the county being little more than a judiciary convenience in New England, but in the middle, western, and southern states, invested, as is the state, with more functions. The township system exists essentially, however, in all the states. It is decentralizing, democratic, and happy in its workings. 'The native of New England,' says De Tocqueville, 'is attached to his township, because it is independent and free: his co-operation in its affairs insures his attachment to its interests; the well-being it affords him secures his affection; and its welfare is the

aim of his ambition and of his future exertions. He takes part in every occurrence in the place; he practices the art of government in the small sphere within his reach; he accustoms himself to those forms without which liberty can only advance by revolutions; he imbibes their spirit; he acquires a taste for order, comprehends the balance of powers, and collects clear practical notions on the nature of his duties and the extent of his rights.'

MUNIFICENT, a. *mū-nĭf'i-sĕnt* [F. *munificent*—from L. *munificens* or *munificen'tem*, presenting with anything—from L. *munus*, a gift; *facĭō*, I make: It. *munificente*]: marked by great liberality in giving; very liberal; generous. MUNIF'ICENTLY, ad. *-lĭ*. MUNIFICENCE, n. *mū-nĭf'-sĕns* [F.—L.]: a high degree of generosity or liberality.—SYN. of 'munificence': beneficence; benevolence; liberality; generosity; bounty; bounteousness; bountifulness.

MUNIMENT, n. *mū'nĭ-mĕnt* [L. *munīmentum*, anything constructed for defense, a protection—from *munĭō*, I fortify: F. *muniment*]: that which protects or defends; a stronghold; a deed, charter, or record, by which rights, etc., are defended or maintained. MUNIMENT HOUSE, strong fire-proof building or apartment, suited to contain and preserve archives and similar valuables.

MUNITION, n. *mū-nĭsh'ŭn* [F. *munition*—from L. *munītiōnem*, a fortification—from *munĭō*, I fortify]: materials used in war, as *munitions* of war; in *OE.*, a fortification; a stronghold.

MUNJEET, n. *mŭn'jēt* [Skr. *majith*], (*Rubia cordifolia* or *munjista*): species of Madder (q.v.), whose root yields an excellent red dye. The plant differs from the common madder in its more distinctly quadrangular stem, its cordate-oblong leaves, commonly in fours, and its red berries. It is a native of India, China, Japan, Central Asia, and Siberia. The root has long been used in India as affording a red dye; and is now an article of export to Europe, as a substitute for madder.

MUNK, *mûnk*, HANS: 1589–1628, June 3; b. Elsinore, Denmark: navigator. He was the son of a noted pilot, and was bred to the sea. For many years he made annual voyages from Denmark and Norway to the n. shores of America, and achieved wide repute for his geographical knowledge and skill as a navigator. In 1619 King Christian IV. commissioned him to undertake the discovery of a n. w. route to the Indies. He sailed from Elsinore May 16, with two ships and nearly 700 men; sighted Cape Farewell June 20; and then advanced n. in Davis Strait to about 69°. With two of his crew—the sole survivors of his expedition—he landed on the coast of Norway 1620, Sep. 25. He started on a second expedition 1621, Mar., advanced to 75°, and returning 1623, June, reported an open sea beyond that degree of latitude, an assertion then ridiculed but now believed. After making several trade voyages to N. America, he undertook a third Arctic expedition, and died in the polar region before completing

MUNK, Salomon: orientalist: b. Glogau, Silesia, of Jewish parentage, 1805, May 14; d. 1867, Feb. 6. He was educated in Berlin, Bonn, and Paris; studied the oriental languages; and was custodian of oriental manuscripts in the National Library at Paris 1840-52. He subsequently traveled in Egypt and Syria; became entirely blind; and, despite his affliction, was appointed professor of Hebrew, Chaldaic, and Syriac in the College of France 1865. Munk published numerous works, including an annotated edition of Maimonides's *Doctor Perplexorum; Palestine: Geographical and Historical Description; Commentary of Rabbi Tanchoum of Jerusalem on the Book of Habakkouk; Reflections on the Worship of the Ancient Hebrews and Its Harmony With Other Worships of Antiquity;* and many articles on Arabic and Hebrew philosophy in *Dictionnaire des Sciences Philosophiques.*

MUNKACSY, *môn'kâ-chē,* Michael: Hungarian painter: b. Munkacs, Bereg co., Hungary, 1846, Oct. 10; d. Endenich, near Bonn, 1900, May 1. His real name was Lieb, but he is known only under the assumed name derived from that of his birthplace. Beginning life as a carpenter, he met a strolling portrait painter in Gyula, who was so much struck by the artisan's interest in art that he gave him painting lessons. Munkacsy proceeded to paint portraits and genre pictures, taking his subjects from common country life. One of these early canvases, *A Country Idyll,* was purchased by the Art Union of Pesth. He eventually put himself under the instruction of the battle-painter Franz Adam at Munich. He made rapid progress and the Hungarian government awarded him the first prize for genre paintings thrice in succession, and he was thus enabled to take up his residence at Düsseldorf and to study under Knaus and Vautier. The first great picture he painted was *The Last Day of a Condemned Man,* exhibited in the Paris Salon in 1870. This was followed in 1871 by *Wartime* (an episode in the Hungarian war). The succeeding year he made Paris his home and his pictures began to attract growing attention. He painted many small genres of singular power and character, such as *Going to School; The Kitchen Politician; The Butter Woman; The Pawn Shop* (1874); *The Workshop* (1875); but as his strength and mastery of his art grew he rose to loftier subjects, religious and historical. In 1877 he painted *Milton in His Blindness Dictating Paradise Lost,* to which was awarded the gold medal at the Paris Exposition. It is now in the Lenox Library, New York. Great as was the sensation created by this picture, a historic genre of remarkable coloring in gray and black and of profound insight and power of characterization, an even deeper impression was produced by his *Christ Before Pilate* (1882), which some critics consider the greatest religious picture of its century. This vast canvas is startling in its freshness

of conception, its living action, the mingled grandeur and pathos which the artist has infused into his treatment of the central figure, as well as its masterly composition and technique. It has been exhibited in all quarters of the civilized world and was bought by John Wanamaker of Philadelphia for $120,000. It was followed by his dramatic *Christ on Calvary,* the religious intensity of which is heightened by the accurate fidelity to differing national types with which the spectators of the Crucifixion are portrayed; a piece of realism whose suggestiveness is obvious. In 1886, he produced *The Last Moments of Mozart,* formerly in the collection of Russell Alger, Detroit, Mich. The present owner paid $50,000 for this pathetic picture, in which the composer is listening to his still uncompleted requiem, sung at his bedside by his favorite singers, the night before his death. The last three years of his life this painter suffered from mental alienation and closed his days in a sanitarium.

MUN'KAR. See MOHAMMEDANISM.

MUNKIT'TRICK, RICHARD KENDALL: American author and editor: b. Manchester, England, 1853, Mar. 5. He was educated in American academies and was one of the editors of the humorous journal *Puck* 1881-9. He was editor of *Judge* from 1901-5. He has published *Farming* (1891); *The Moon Prince and Other Nabobs* (1893); *New Jersey Arabian Nights* (1893); *The Acrobatic Muse* (1896); *The Slambangaree* (1898).

MUNN, CHARLES CLARK: American novelist: b. Southington, Conn., 1848. His boyhood was spent on a farm which he left at 17 and for 30 years was engaged as a commercial traveler. He is the author of several popular novels, including: *Pocket Island* (1900); *Uncle Terry: a Story of the Maine Coast* (1900); *Rockhaven* (1902); *The Hermits* (1904); *The Girl from Tim's Place* (1906); *Boyhood Days on the Farm* (1907); etc.

MUNN, ORSON DESAIX: American publisher: b. Monson, Hampden co., Mass., 1824, June 11; d. New York City 1907, Feb. 28. He was educated at the academy in Monson, was a clerk and country store-keeper there until 1846, and then bought the *Scientific American,* which he published till his death. He was also head of Munn & Co., patent solicitors.

MUNROE, *mŭn-rō',* CHARLES EDWARD, PH.D.: American chemist and expert on explosives: b. Cambridge, Mass., 1849, May 24. He was graduated at Harvard in 1871; was assistant in chemistry there for three years; professor of chemistry United States Naval Academy 1874-86; chemist to United States Naval Torpedo Station 1886-92; and since the last date professor of chemistry and dean of Columbian University, Washington, D. C. He was a special agent on chemical industries for the United States census of 1900 and 1905; is president of

the American Chemical Society; received the decoration of the Order of the Medjidje from the Sultan of Turkey 1901; has invented a smokeless powder; and is the author of various monographs on chemistry, notably of explosives.

MUNROE, Charles Kirk: American writer for boys: b. Appleton, Wis., 1856, Dec. 15. He was educated at Harvard and was editor of *Harper's Round Table* 1879-82. Among his numerous works are: *The Flamingo Feather* (1887); *Wakulla* (1888); *Campmates; Canoemates; Raftmates; Rick Dale; Dorymates; The White Conquerors; Big Cypress; At War With Pontiac; Life of Mrs. Stowe* (with her son); *Copper Princess* (1898); *Forward March* (1899); *Under the Great Bear* (1900); etc.

MUNROE, Robert, m.a., ll.d.: Scottish archæologist: b. Ross-shire 1835, July 21. He was educated at the University of Edinburgh and was a physician at Kilmarnock till 1886, when he turned his whole attention to archæological researches. He is a member of many learned societies at home and abroad and has published *Ancient Scottish Lake Dwellings* (1882); *The Lake Dwellings of Europe* (1890); *Rambles and Studies in Bosnia, Herzegovina and Dalmatia* (1895); *Prehistoric Problems* (1897); *Prehistoric Scotland and Its Place in European Civilization* (1899); *Archæology and False Antiquities* (1905); etc.

MUN'SEE INDIANS: an American tribe of the Delaware family, originally one of the three great divisions of that race. They were sometimes called the Wolf tribe of the Delawares. They resided along the Delaware river, and in New York, Pennsylvania, and New Jersey. During the Revolution many of the Munsees removed to Canada, where at Thames, Ontario, in 1903, there were about 100 survivors. At Green Bay, Wis., is another tribal remnant of several hundred. See Delaware Indians.

MUN'SELL, Joel: American printer: b. Northfield, Mass., 1808, Apr. 14; d. Albany, N. Y., 1880, Jan. 15. He established himself in Albany in 1827, and was publisher and editor of the *New York State Mechanic* from 1841 to 1843. At various times he was the publisher of the *Unionist*, the Albany *Daily State Register, Morning Express* and *Statesman*, and other journals. Munsell made a close study of the art of printing, in its history and application, and his collection of works on the subject, the largest in America, was in part purchased by the state for the New York state library. He contributed papers to the *Transactions* of the Albany Institute, of which he was a founder, and published: *Outlines of the History of Printing* (1839); *Annals of Albany* (1849-59); *Every-Day Book of History and Chronology* (1856); *Chronology of Paper and Paper-Making* (1857, enlarged

1870); and *Manual of the First Lutheran Church of Albany, 1670-1870* (1871).

MUNSEY, *mŭn'sĭ* or *-zĭ*, FRANK ANDREW: American publisher: b. Mercer, Me., 1854, Aug. 21. After receiving a common school education, he began his business career in a country store, and then became manager of a telegraph office in Augusta, Me. He went to New York in 1882 and started *The Golden Argosy*, a juvenile weekly, which he afterward changed into a monthly for adults under the style of *The Argosy*. *Munsey's Weekly* appeared in 1890, and after issuing this for one year he transformed it also into a monthly calling it *Munsey's Magazine*. He also founded *The Junior Munsey* and *The Puritan*. He might he said to be the pioneer in the publication of cheap illustrated publications. He also controls the New York *Daily News*, the Boston *Journal* and the Washington *Times*. He is a popular member of many clubs in New York City and elsewhere, and is the author of several books for boys: *Afloat in a Great City* (1887); *The Boy Broker* (1888); *A Tragedy of Errors* (1889); *Under Fire* (1890); and *Derringforth* (1894).

MUN'SON, JAMES EUGENE: American inventor: b. Paris, N. Y., 1825, May 12. He was educated at Amherst College and in 1857 removed to New York, where he was court stenographer for 30 years. He invented the 'Munson System' of shorthand, a machine for operating the typewriter by telegraph, and a type-setting machine. He published: *The Complete Phonographer* (1866); *Dictionary of Practical Phonography* (1875); *A Shorter Course in Munson Phonography* (1900); *Munson's Pocket Dictionary of Phonography* (1906); etc.

MUN'STER: Ireland, the s.w. and largest of the four provinces of that country, bounded on the n. by Connaught, on the e. by Leinster, and on the w. and s. by the Atlantic ocean. It has an area of 9,521 sq.m. and is divided into the counties of Clare, Cork, Kerry, Limerick, Tipperary, and Waterford. Pop. (1901) 1,076,188.

MÜNSTER, *mün'stĕr:* Prussia, the capital of Westphalia, a town and episcopal see, in a plain on the Aa, at the junction of several railways and on the Dortmund-Ems canal, 78 m. n.e. of Cologne. The site of its mediæval ramparts has been converted into promenades. The principal edifices are the cathedral, the church of St. Lambert, the Rathaus, exchange, museum, theatre, the Pauline Library, several educational, benevolent, and charitable institutions, etc. The manufactures include woolen, linen, and cotton goods, leather, sugar, starch, etc. Münster originated in a monastery around which a settlement arose in the 12th c.; it was long governed by martial bishops. The most notable event in its long history occurred in 1532-5 when the city fell into the hands of the Anabaptists (q.v.). Pop. (1900) 63,776.

MÜNSTERBERG, *mün'ster-bėrg*, HUGO, A.M., PH.D., LL.D.: German-American psychologist: b. Dantzic, Germany, 1863, June 1. He graduated at the Dantzic Gymnasium in 1882, and pursued post-graduate studies in physiology, philosophy, natural sciences and medicine until 1887. He received the degree of PH.D. at Leipsic in 1885 and that of M.D. at Heidelberg in 1887. After this he was instructor and assistant professor of psychology in the University of Freiburg at Baden, Germany. In 1892 he came to America and accepted the professorship of experimental psychology at Harvard University, Cambridge, Mass., where he has remained ever since. His studies in psychology have chiefly been devoted to its physiological aspects. He is a member of the Psychological Association and was elected its president in 1898; also a member of the American Academy of Arts and Sciences. Many of his works are in the German language: *Die Willenshandlung* (1888); *Gedankenübertragung* (1889); *Der Ursprung der Sittlichkeit* (1889); *Beiträge zur Experimentellen Psychologie* (1889-93); *Aufgaben und Methoden der Psychologie* (1891); *Psychology and Life* (1899); *Grundzüge der Psychologie* (1900); *American Traits* (1902); *The Americans* (1904); *Principles of Art Education* (1905); *Eternal Life* (1905); *Science and Idealism* (1906); etc. He has also been a frequent contributor of psychological and philosophical articles to the *Psychological Review* and many other magazines and periodicals.

MUNT'JAK (*Cervus muntjac, Cervulus vaginalis*, or *Stylocerus muntjac*): species of deer, abundant in Java, Sumatra, and other islands of the same region; about one-fifth larger than the roebuck, which it considerably resembles in form. It is a solitary animal, and inhabits dense thickets and forest-covered hills. The horns are remarkable, as there springs from the common base of each an additional horn about an inch and a half in length; the principal horn, which is simple, curved, and pointed, being about five inches in length. The female has no horns. The male has large canine teeth or tusks, which also are lacking in the female. Allied species are found in India and China.

MUNTZ METAL, n. *mŭnts:* an alloy used in the form of thin plates for the sheathing of ships. See under METAL.

MÜNZER, *münt'sėr*, THOMAS: one of the leaders of the Anabaptists (q.v.): 1490—1525; b. Stolberg, in the Harz. He took his degree A.M. at Wittenberg, and for some time preached the doctrines of the Reformation in Zwickau and other places. Ere long, however, he adopted mystic views, and declaimed against what he called the 'servile, literal, and half' measures of the Reformers, requiring a radical reformation both in church and state according to his 'inward light.' He was a socialist, with

semi-pantheistic views, and sought to establish a theocracy. Proclaiming an entire community of goods, he incited the populace to plunder the houses of the wealthy. Mühlhausen fell for a time under his sway, and that of another fanatic named Pfeifer, who joined him. He was active in the Peasant war, and inflamed the spirits of the insurgents by the wildest speeches and songs; but they were utterly defeated 1525, May 15, after a severe conflict, at Frankenhausen, by the Elector John and Duke George of Saxony, the Landgrave of Hesse, and the Duke of Brunswick. Münzer fled, but was taken and carried to Mühlhausen, where he was beheaded with Pfeifer and a number of others. He showed no dignity or courage in the closing scenes of his life. See Strobel's *Leben Schriften und Lehren Thom. Münzer's* (Nürnb. 1795); Seidemann's *Thom. Münzer* (Dresd. and Leips. 1842); and Heinrich Leo in the *Evangelische Kirchenzeitung* (Berl. 1856).

MURÆNA, *mū-rē'na:* genus of malacopterous fishes, of those to which the name eel is commonly given; all the eels being sometimes included in the family *Muræniдæ.* See EEL. The true *Muræna* have no fins, except the dorsal and anal, which are low and fleshy. They have one row of sharp teeth in each jaw. The head is very large, and the jaws are moved with great power. The muræna of the Romans, or MURRY (*M. helena*), abounds in the Mediterranean, and is sometimes of large size, four feet or more in length, golden yellow in front, and purple toward the tail, beautifully banded and mottled. It is much thicker in proportion to its length than any of the fresh-water eels. Its flesh is white and highly esteemed. It prefers salt water, but can accommodate itself to a fresh-water pond. The ancient Romans kept and fed it in vivaria. That Vedius Pollio fed his muræ-nas with offending slaves is a familiar story. This muræna has been caught on the British shores. Allied is the genus *Sidera,* found in the Pacific.

MURAGE, n. *mū'rāj* [L. *murus,* a wall]: money paid for keeping the walls of a city in repair.

MURAL, a. *mū'răl* [F. *mural*—from *murālis,* belonging to a wall—from *murus,* a wall: It. *murale*]: pertaining to or resembling walls. MURAL CIRCLE, the principal fixed instrument in an observatory, consisting of a large graduated circle fixed on a solid perpendicular wall (see CIRCLE, MURAL). MURAL CROWN, in *anc. Rome,* the crown bestowed on him who first mounted the wall of a besieged town, and fixed there the standard of the army. In *her.,* a crown in the form of the top of a circular tower, masoned and embattled, representing the crown given by the Romans as a mark of distinction to the soldier who first mounted the walls of a besieged town.

MURAL DECORATION: mural decoration includes, besides wall painting, the facing of the walls with

marble, arranged in patterns or carved in relief, as well as the use of tiles, mosaic, decorative plaster sgraffito, fresco, and stenciling; also of such wall coverings as tapestry, painted hangings, printed papers and cloths. The history of mural decoration takes us back to the earliest times. In early Egypt the wall surfaces were covered with conventional figures, or vertical stripes and zigzags, cut in slightly below the surface. These early patterns, as well as the human figures and hieroglyphics of later and more elaborate work, were carefully colored. Painting of patterns and human subjects on the uncarved flat surface was also used: but always in flat color, without gradation, and therefore wholly conventional in character. In Babylonia and Assyria, wall surfaces were frequently covered with alabaster slabs, carved in low relief, and with enameled and colored bricks. In Greece, the wall surfaces which formed the background of reliefs were frequently highly colored and much of the detail was brought out in contrasting tones. The Etruscans had a system of wall painting, and their tombs dating back to the 8th century still show examples of their work, but is of but little comparative merit. The principal specimens remaining of Roman wall-painting are to be found in Pompeii. There is also a good example in the so-called House of Livia, on the Palatine Hill in Rome. The early Christians, who held their religious services in the catacombs, were accustomed, from the 1st to the 9th century, to decorate the walls, and we have wall pictures of the 4th century still remaining. Byzantine architecture is especially noted for its mosaic wall decoration, as found, for example, in Santa Sophia, Constantinople, and Saint Mark's, Venice. Romanesque examples are found in the Cathedral of Monreale, Sicily, the church of San Clemente, Rome, and San Miniato, near Florence. Gothic church architecture depends more for its decoration on its stained glass than upon wall painting or mosaic, although in Italian Gothic art examples of colored mural decoration are numerous. Under the influence of the Renaissance wall paintings were numerous and beautiful, especially in Florence and Sienna; and soon the palaces of Rome surpassed even those, the work being generally in fresco. Later work, especially after the introduction of oil painting, grew to have somewhat of the nature of easel pictures. There are good examples of this later Renaissance style in the Doges' palace in Venice, and in the Italian churches, and it reappears in the modern work of the Pantheon and the Hotel de Ville, Paris. In America, the wall paintings at the Boston public library and the Library of Congress, besides some recent work in New York city, are worthy of attention.

The names of the painters who have left us wall decorations as products of their work give us a key to the progress of mural painting. From the time when Giotto

gave life to a dead art to the time of Puvis de Chavannes is a period of 500 years. Following Giotto came the Florentines, such as Orcagna, Masaccio, Benozzo, Gozzoli, Lippi, and Ghirlandajo, and the Umbrians and Siennese, such as Lorenzetti, Signorelli, Perugino, Pinturicchio, and Raphael. This great period of mural painting culminates in the work of Michelangelo in the Sistine Chapel. Later came the Venetians Titian, Paul Veronese and Tintoretto; but their work was generally on canvas, stretched on frames. From the period of the Renaissance to the last part of the 19th century there was little notable mural decoration, but since then there have come Hippolyte, Flandrin, Puvis de Chavannes, and Baudry, in France; La Farge, Abbey, Blashfield, Walker, Vedder, Mowbray, Cox, Simmons, Blum, Reid, Turner, and Sargent, in America, have been carrying out wall decorations in a manner that speaks encouragingly for the 20th century. Among the more celebrated and important pieces of mural painting are La Farge's *Ascension of Christ* in the Church of the Ascension, New York, and his decoration of Trinity Church in Boston; Simmons' paintings in the criminal court building, New York; Blashfield's in the Congressional Library at Washington; and the magnificent pictures by Sargent in Sargent Hall, Boston public library.

Mosaic.—For external pictorial decoration mosaic is the best medium. It is made generally of small glass tesseræ, which can be colored freely, and even gilded by the insertion of leaf gold, producing permanent metallic lustre in backgrounds and ornaments. Mosaic may be used on a large scale with stone, brick, or terra-cotta, and either polished or left with a dull finish. Mosaics may be of marble or of glazed tiles; but the term when used without qualification refers to work done with very small tesseræ, as stated above.

Fresco.—The name 'fresco' means painted in water-color upon fresh plaster, and this was the great medium of the Renaissance men. Encaustic means that heat is applied in fixing the color. Encaustic was used especially by the Greeks and Romans, but little is known of the exact process. The only example of the Pompeian decoration that has been brought to America is that in the Metropolitan Art Museum in New York, taken from the Boscoreale Villa, near Pompeii, buried in the eruption of Mount Vesuvius in 79 A.D. These were unearthed in 1901, and the entire plaster walls of one room and sections from other parts of the villa were brought late in the year 1903. Consult: Baldry, *Modern Mural Decoration* (1902); Crowninshield, *Mural Painting* (1887); King, *American Mural Painting* (1902); Merrifield, *The Art of Fresco Painting* (1846); Sutherland, *Modern Wall Decoration* (1893); Westlake, *Outlines of the History of Design in Mural Painting* (1902).

MURAT, *mü-râ'*, JOACHIM, King of Naples: 1768, Mar. 25—1815, Oct. 13 (reigned 1808–15); b. at La Bastide Fortunière, near Cahors, France; son of a farmer, or, as some say, of an innkeeper. He was at first intended for the priesthood, and began the study of theology and canon law at the Univ. of Toulouse, but entered the army, and, being threatened with punishment for insubordination, deserted, and after spending some time at home, went to Paris, where, it is said, he was for some time a waiter at a café, but soon obtained admission into the Constitutional Guard of Louis XVI. On the outbreak of the Revolution, he was made sub-lieut. in a cavalry regiment. His gallantry and extreme republicanism soon won him the rank of colonel. He attached himself closely to Bonaparte, under whom he served in Italy and in Egypt, signalizing himself in many battles; rose to the rank of a gen. of division (1799); returned with Bonaparte to France; and rendered him most important assistance on the 18th Brumaire, by dispersing the Council of Five Hundred at St. Cloud. Bonaparte now intrusted him with the command of the Consular Guard, and gave him his youngest sister, Caroline, in marriage. M. commanded the cavalry at Marengo, where he greatly distinguished himself. On the establishment of the French Empire, he was loaded with honors. He continued to command the cavalry in the armies led by the emperor, and contributed not a little to the victory at Austerlitz, and to many other victories. In 1806, the newly-erected grand duchy of Berg (q.v.) was bestowed on him. 1808, Aug. 1, he was proclaimed king of the Two Sicilies by the style Joachim I. Napoleon. He took possession of Naples, but the Bourbons, through the support of Britain, retained Sicily.

M. possessed the qualities requisite for the most brilliant cavalry general in Europe rather than those of a king. He was dashing, magnificently brave, and his soldiers enthusiastically followed him; but he was deficient in political skill and energy; yet by the moderation of his government, he won the hearts of his subjects; and he instituted some beneficent reforms. Even his love of pomp and show, and the theatrical splendor of his equipment, which were a subject of mirth in France and Germany, rather gratified the Neapolitans. He endured with difficulty the yoke of Napoleon, which left him little but the outward show of royalty. In the expedition against Russia, he commanded the whole cavalry, but on its failure he returned to Naples, anxious and discontented. He joined the French army again 1813, but after the battle of Leipzig, withdrew to his own dominions, determined on breaking the French fetters with which he was bound. He concluded a treaty with Austria, and a truce with the British admiral, and promised the allies an auxiliary corps. He hesitated, however, even after his new course seemed to have been decisively adopted; and, finding his position insecure after Napoleon's overthrow, he entered into private communications

with him at Elba. On the emperor's return to France, M. placed himself at the head of an army of 40,000 men, and commenced a hasty war against Austria. He was defeated at Ferrara, 1815, Apr. 12, and again at Tolentino, May 2. With a few horsemen he fled to Naples, where all was insurreetion and eommotion; thence to the island of Isehia, and found his way to Franee, while his wife and children took refuge in the British fleet. After Napoleon's final overthrow, he found refuge in Corsica, from which he proeeeded in a foolhardy manner with a few followers to the coast of Naples, and proclaimed himself king and liberator, but was presently taken prisoner, and after trial by a court-martial under a law of his own passing was condemned and sentenced to be shot in half an hour. He wrote a pathetie farewell to his wife and children; and the sentence was executed in a hall of the castle of Pizzo. See Léonard Gallais, *Histoire de Joachim Murat* (Paris 1828), and Coletta, *Histoire des Six derniers mois de la Vie de Joachim Murat* (Paris 1821). His widow assumed the title Countess of Lipona, and resided in the neighborhood of Trieste, where she died 1839. His two sons went to the United States. Napoléon Achille M., elder son, settled in Florida; published a number of works on the constitution and politics of the United States; and died 1847, Apr. 15. Napoléon Lucien Charles, younger son, married an American lady 1827, but suffered several reverses in fortune, and Madame M. was obliged to open a boarding-school for the support of herself and her husband. Twiee he attempted to return to France seeretly (1837 and 44), but failed on both occasions. The revolution of 1848, however, opened the country to him. He attached himself closely to Prince Louis Napoleon; and was in 1849 French ambassador extraordinary at Turin. In 1852 he was made a senator; and in 1853 he received the title Prince. The Italian revolution appeared to present some chances for him, but nothing came of these. He was made prisoner by the Germans at Metz 1870.

MURATORI, *mô-râ-tō′rē*, Ludovico Antonio: famous antiquary and historian: 1672, Oet. 21—1750, Jan. 23; b. Vignola, in the duchy of Modena. Having entered into holy orders, without, however, aecepting any eeclesiastical offiee, his life was devoted partly to the literature of his profession, but mainly to researches in history, both sacred and profane, especially the history of his native country. In his 22d year, he was appointed one of the librarians of the Ambrosian Library at Milan, a post which has since received equal eelebrity from a successor, Cardinal Angelo Mai (q.v.). Here he published a eollee-tion of inedited Greek and Latin fragments, *Anecdota Græca* and *Anecdota Latina*. But his most important labors were reserved for the eapital of his native duchy, whither, 1700, he was recalled by the Duke of Modena, to take eharge of the celebrated D'Este Library, and of the ducal archives. From the date of his return to Modena, M. applied himself more exclusively to Italian mediæval

history. In 1723 vol. I. of his great collection, *Rerum Italicarum Scriptores*, appeared, and the work proceeded at regular intervals for nearly 30 years, the last of its 28 folio vols. bearing the date 1751. This immense publication, which was produced by the joint contributions of the princes and higher nobility of Italy, ranges through all the chronicles of Italy from the 5th to the 16th c. illustrated with commentaries and critical notices. It was accompanied by a collection of dissertations, illustrative of the religious, literary, social, political, military, and commercial relations of the several states of Italy during the period (6 vols. folio, 1738–42), a work not exempt from errors, yet a treasure-house of mediæval antiquities. During these prodigious labors, M. carried on an active literary correspondence with the scholars of the various countries of Europe, and contributed essays to the principal historical and literary academies, of most of which he was a member. He undertook also a general History of Italy from the commencement of the vulgar era to his own time; in 12 vols. 4to, and still has value as a book of reference, having been continued by Coppi to 1819. M.'s collection of *Inscriptions* (6 vols. folio, 1739–43), is an important contribution to classical scholarship; and he left also works of standard merit in jurisprudence, literary criticism, poetry, biography, and even of the history of medical science. In the studies of his own profession, liturgical, historical, dogmatical, and even ascetical, M. was scarcely less distinguished than if he had made these the pursuit of his life. Some of his opinions were regarded with disfavor; but the learned Pope Benedict XIV., without expressing direct approval of the opinions in question, declared them free from the imputation of being contrary either to the doctrine or to the discipline of the church. Although M.'s life was essentially that of a scholar, yet his exactness in discharging the duties of a parish priest was beyond all praise. He died at Modena. His works fill 46 vols. in folio, 34 in 4to, 13 in 8vo, and many more in 12mo. Some were published by his nephew, G. F. Muratori, from whom we also have a life of his distinguished uncle, in 4to, printed at Omer 1758.

MURATO'RIAN FRAGMENT, or CANON OF MURATORI: list of New Testament books received in the church at the date of its writing—last quarter of the 2d c.; named from its discoverer, Muratori (q.v.). Its authorship is unknown. The list, which is only fragmentary, and found in a MS. of the 8th or 9th c., includes all the books of the present canon, except *Hebrews, James, I Peter, II Peter, III John*

MURCHISON, *mĕr'ki-son*, Sir RODERICK IMPEY, D.C.L., LL.D.: geologist and geographer: 1792, Feb. 19—1871, Oct. 22; b. Tarradale, Ross-shire. He was educated at the grammar school, Durham; and having a bias for military life, next studied at the Military College, Marlow. He entered the army at an early age, and served as an officer in the 36th regt. in Spain and Portugal. He was placed on the staff of his uncle, Gen. Sir Alexander Mackenzie, and then obtained a captaincy in the 6th dragoons. Quitting the army 1816, he applied himself to science—especially geology. He afterward travelled in various parts of the globe. He found the same sedimentary strata lying in the earth's crust beneath the old red sandstone in the mountainous regions of Norway and Sweden, in the vast and distant provinces of the Russian empire, and in America. The result of his investigations was the discovery and establishment of the Silurian system, which won for him the Copley medal of the Royal Soc., and European reputation as a geologist, which his subsequent exposition of the Devonian, Permian, and Laurentian systems increased and confirmed. He explored several parts of Germany, Poland, and the Carpathians; and 1840 he commenced a geological survey of the Russian empire, under the countenance of the imperial government. M. de Verneuil was associated with him in this great work, completed 1845. Struck with the resemblance in geological structure between the Ural Mountains and the Australian chain, M., in his anniversary address 1844, first predicted the discovery of gold in Australia. In 1846, six years before that metal was practically worked, he addressed a letter to the pres. of the Royal Geological Soc. of Cornwall, inciting the unemployed Cornish tin-miners to emigrate and dig for gold in Australia. He was elected pres. of the British Assoc. for the Advancement of Science 1846; pres. of the Royal Geographical Soc. 1844 and 5; re-elected 1857, and continued in office till 1870, when he was compelled to resign it by paralysis. His anniversary addresses to the geographers were of great interest and value. Perhaps no man of the present century has done more to promote geographical science at home, and kindle the spirit of adventure among those engaged in Arctic exploration and African discovery. He was interested especially in Dr. Livingtone's work in Africa. In 1855, he succeeded Sir H. De la Beche in the office of director of the Museum of Practical Geology. He was a D.C.L. of Oxford, LL.D. of Cambridge, and a vice-pres. of the Royal Soc. He was knighted 1846, made K.C.B. 1853, and a baronet 1863. From the emperor of Russia he received the grand cross of St. Anne, and that of St. Stanislaus. His wealth and high social position enabled him to make his house the resort of the most distinguished men in science, art, literature, and public life. Not long before his death he founded, with a gift of £6,000, a chair of geology and mineralogy in the Univ. of Edinburgh. The greater portion of his contributions to

science were published in *Transactions* of the Geological and other societies. His principal works were *The Silurian* (1836); *The Geology of Russia in Europe and Ural Mountains*, 1845 (2d ed. 1853). He also published vols on the *Tertiary Deposits of Lower Styria, etc.*, (1830), the *Geology of Cheltenham* (1834), etc.,—See *Life of Sir Roderick M.* by Arch. Geikie, LL.D. (1875), and obituary notice by Sir Henry Rawlinson in *Proceedings of the Royal Geographical Society*, XVI. No. 4.

MURCHISONIA, n. *mėr'kĭ-sō'nĭ-ă* [after Sir Robert I. *Murchison*]: a genus of fossil gasteropodous mollusca belonging to the family *Haliotidæ*. The genus consists of at least 50 species, all characteristic of the Paleozoic rocks, occurring in the series from the Lower Silurian up to the Permian. The shell differs from the large genus *Pleurotomaria* only in being very much elongated. Like it, the whorls are sculptured and zoned, the aperture is channelled in front, and the outer lip is deeply notched. MUR'CHISONITE, n. *-sŏn-īt*, a golden or grayish-yellow variety of felspar; a silicate of alumina and potash.

MURCIA, *mėr'shĭ-a*, Sp. *môr'thē-â:* former province of Spain, now subdivided into the smaller provinces of Albacete and Murcia; in the s.e. of the peninsula; bounded n. by New Castile, e. by Valencia, s. by the Mediterranean, w. by Granada, Andalusia, and New Castile; 10,311 sq. m. In the n.e., the province is partly level; in the s.w. it is composed of great valleys, high plateaus, and mountain ranges. The coast comprises stretches of desert. The principal river is the Segura, which flows through the middle of the province, from w. to e. On the whole, M. is not very productive, and never will be, on account of the failure of water, caused partly by destruction of the forests. The only fertile districts are the valleys of the Segura, and the side-valleys of Lorca, Albacete, Chinchilla, and Almansa. The Esparto wastes have remained uncultivated since the banishment of the Moriscoes 1610; and the canal of M., intended to irrigate the arid Campo de Cartagena, is not yet finished. M. is one of the most thinly peopled districts of Spain. The n. yields wheat and barley; the s. maize, fruits, wine, oil, silk, and hemp. Goats, sheep, and swine are reared in great numbers. In metals, salt, and mineral springs M. is abundant; it has also many smelting-works for iron, lead, and copper ores, brimstone and alum. The roads, however, are wretched, and industry in general is backward. The province was frightfully devastated by a great earthquake, 1829, Mar. 18–21. M. was conquered by the Arabs 711; after the fall of the caliphate of Cordova, it became an independent Arab kingdom, but, six years afterward, was subjugated by King Ferdinand III. of Castile 1241.—Pop. (1877) 670,733; modern province (1887) 491,458; (1900) 577,987.

MUR'CIA [the Roman *Murgi*]: large, important, and ancient town of Spain, cap. of the province of M. on the left bank of the Segura, near the junction of that river with the Sangonera, 50 m. s.w. of Alicante. It stands in the midst of a beautiful and luxuriantly productive *huerta* or garden, 16 m. in length, and 7 to 8 m. wide. This *huerta* forms a portion of what is called the vale of M.; is well watered, has a bright green appearance even in winter; produces wheat, flax, pulse, and vegetables, and grows innumerable mulberry, orange, fig, and palm trees. The streets of M. are narrow but clean, and the houses are gaudily painted in pink and yellow. Its squares are filled with cypress, orange, lemon, and other southern trees. It is the see of a bp. suffragan to Toledo; the cathedral is surmounted by a tower begun 1522, completed 1766, and crowned by a dome from which a magnificent view is obtained. The city contains few objects of fine art, which is accounted for by the fact that, on the occasion of its siege by Sebastiani, that general, after promising that persons and property should be respected, entered the town 1810, Apr. 23, and rifled it of its wealth and art-treasures. Silks, linens, baskets, mats, and cordage are manufactured, and oil-mills, tanneries and other works are in operation. Pop. (1877) 91,805; (1887) 98,538; (1900) 111,539.

MURDER, n. *mėr'dėr* [Goth. *mauthrjan;* Ger. *morden*, to slay: Icel. *mord*, a secret slaying: Bohem. *mord*, slaughter: connected with Swiss *morden;* Low Ger. *murten*, to crush: comp. Gael. *marbh*, to kill]: the killing of a human being by a person of a sound mind, and with premeditated malice: INT. a cry of alarm arising from bodily fear: V. to kill or slay with premeditated malice; to put an end to. MUR'DERING, imp. MUR'DERED, pp. *-dėrd:* ADJ. slain with premeditated malice. MURTHER, n. *mėr'thėr*, an old spelling of MURDER. MUR'DERER, n. *-ėr*, one who unlawfully kills a human being. MUR'DERESS, n. *-ĕs*, a woman who kills a human being unlawfully. MUR'DEROUS, a. *-ŭs*, intending murder: done with intent to murder; bloody; sanguinary. MUR'DEROUSLY, ad. *-lĭ*. TO MURDER THE QUEEN'S ENGLISH, in *familiar language*, to commit improprieties in grammar or spelling; to spoil. MURDERING-PIECE, in *OE.*, a small piece of ordnance; a cannon.—SYN. of 'murder, v.': to assassinate; slaughter; destroy;—of 'murderer': assassinator; homicide; cut-throat; blood-shedder; manslayer;—of 'murderous': fell; savage; blood-guilty; bloodthirsty; cruel.

MUR'DER: crime of killing a human being by a sane person with malice aforethought. Under the laws of nearly all civilized countries it is punishable with death. It is immaterial what means are employed to effect the object. Blackstone says that the name of M., as a crime, was anciently applied only to the secret killing of another, which the word *moërda* signifies in the Teutonic language. And among the ancient Goths in Sweden and

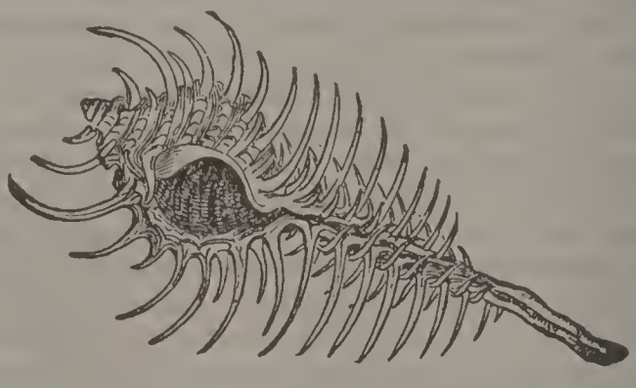
Denmark, the whole vill or neighborhood was punished for the crime, if the murderer was not discovered. M is defined by Coke thus: 'When a person of sound memory and discretion unlawfully killeth any reasonable creature in being, and under the king's peace, with malice aforethought, either express or implied.' Almost every word in this definition has been the subject of discussion in the numerous cases that have occurred in the law-courts. The murderer must be of sound memory or discretion, i.e., he must have attained a certain age, usually not less than 14 years; and not a lunatic or idiot. The act must be done unlawfully, i.e., not in self-defense, or from other justifiable cause. The person killed must be a reasonable creature; hence killing a child in the womb is not M., but is punishable as a different crime (see INFANTICIDE). The essential thing in M. is that it be done maliciously and deliberately; hence, in cases of hot blood and scuffling, the offense is generally manslaughter only. Killing by duelling is thus M., for it is deliberate. To make good the plea of self-defense, there must be such violence offered to a man as would put one, using good discretion, in fear for his life or limb. In the case of starving shipwrecked sailors killing one of their number for food to preserve their own lives, it was decided in England in the 'Mignonette case,' 1884, that though there might be conceded some degree of justification from necessity in certain conceivable cases, 'it is not correct to say that there is any absolute or unqualified necessity to preserve one's life. On the contrary, it is frequently our highest duty to sacrifice it.' Accordingly, Chief-Justice Coleridge—the other judges assenting—sentenced the prisoners to death for murder, but with recommendation to mercy; and their sentence was changed to six months' imprisonment. It is not necessary, to constitute M., that the murderer kill the man that he intended, provided he had a deliberate design to murder some one. Thus, if one shoots at A, and misses him, but kills B, this is M., because of the previous felonious intent, which the law transfers from one to the other. So if one lays poison for A, and B, against whom the poisoner had no felonious intent, takes it, and is killed, this is M. The law in Mass. is that M. committed 'in perpetrating or attempting to perpetrate any crime punishable with death, or imprisonment for life,' is M. in the first degree; all other M. is M. in the second degree. On this point there are some differences in the laws of different states. —Formerly, in England, the Benefit of Clergy (q.v.) was allowed in cases of M., till it was abolished by 7 and 8 Geo. IV. c. 28. The sentence of death on murderers is carried out by hanging; formerly, in Britain, and other countries, the murderer was sentenced after death to be hung on a gibbet in chains near the place of the crime; dissection was added as part of the sentence, and the execution was to take place on the next day but one after sentence. Now an interval varying from a fortnight to several months

usually takes place, and in Britain the body is usually buried in the precincts of the prison; but in the United States it is usually yielded to kindred or friends claiming it. In some of the states there is a movement toward infliction of the death-penalty by electricity instead of by hanging; in New York this change was established by law, taking effect 1890. See MANSLAUGHTER: HOMICIDE.

MURDOCK, *mėr'dok*, JAMES EDWARD: actor and elocutionist: b. 1811, Jan. 25, Philadelphia. He learned his father's trade of bookbinder; but 1829, Oct. 13, came out as actor of Frederick in Kotzebue's *Lover's Vows*, and was many years on the stage in the chief cities of the United States, meeting critical approval, but not having great popular success as a star. He appeared with Fanny Kemble 1833. In 1838 he left the stage for a time and had a school for physical and mental culture in Boston. He became stage-manager at Chestnut St. Theatre, Philadelphia, 1840; then for four years was a lecturer on Shakespeare and teacher of elocution; 1845 resumed acting, playing Hamlet at Park St. Theatre, New York, and elsewhere from Canada to California. In 1856 he had moderate success at the Haymarket Theatre, London; was settled on a farm near Lebanon, O., 1857-8; during the civil war acted as nurse in hospitals, gave readings for the benefit of the sanitary commission, and served as volunteer aide on staff of Gen. W. S. Rosecrans; and subsequently settled at Cincinnati as prof. of elocution at the coll. of music. He was joint author with Wm. Russell of *Orthophony, or Culture of the Voice* (1845), and 1880 published *The Stage*. He died 1893, May 19.

MURE, n. *mūr:* in *OE.*, a wall: V. to inclose in walls: see MURAL, and IMMURE.

MUREX, n. *mū'rĕks* [L. *murex*, the shell-fish yielding a purple dye]: Linnæan genus of gasteropodous mollusks, of which has now been formed the family *Muricidæ*, belonging to the order *Pectinibranchiata* of Cuvier. The



Woodcock-Shell (*Murex tenuispinæ*).

sexes are distinct; the animal has a broad foot, often much expanded; the eyes are not on stalks; the shell has a straight canal in front, often prolonged through part of a very long beak; no canal behind. The *Muricidæ* all prey on other mollusks, boring through the shells with their hard-toothed proboscis. The name ROCK-

SHELL is often given to many species of murex; and some from the length of the beak, are called WOODCOCK-SHELL. Some have the shell beset with long and regularly arranged spines. The whorls of the shell are marked with ridges, or *varices*. Species are found in all parts of the world; the largest are tropical. The ancients obtained their purple dye (see TYRIAN PURPLE) from species of murex, particularly *M. trunculus* and *M. brandaris*. The VENUS COMB of the Indian seas is *M. tribulus*, a very delicate and beautiful shell, with many long, thin spines. Fossil *Muricidæ* are numerous, but are scarcely found in any formation older than the eocene tertiary. MUREXAN, n. *mū-rĕks'ăn*, purpuric acid.

MU'REXIDE: in chemistry, the hydrogen-ammonium salt of a hypothetical acid called 'purpuric acid,' the acid itself not being known in the free state. Murexide has the chemical formula $C_8H_4N_5O_6(NH_4)$, and about 1855 it was largely used as a dye. The colors that it gives are fast so far as light is concerned, and are quite brilliant; but they tarnish quickly when exposed to sulphur dioxid gas, and hence are more or less fugitive in houses where coal gas is burned. As a dye, murexide has now been replaced by the coal-tar colors (q.v.). It may be prepared by evaporating a mixture of uric acid and nitric acid to dryness, and moistening the reddish residue with ammonia.

MURFREE, *mėr'frē*, MARY NOAILLES (pen-name CHARLES EGBERT CRADDOCK): author: b. 1850, Jan. 24; grand-daughter of Col. Hardy Murfree, who emigrated, 1807, from N. C. to Tenn., where Murfreesboro was named in his honor. The losses of the civil war caused the family to leave Nashville and live in the old mansion at Grantlands, near Murfreesboro, about 15 years, removing thence to St. Louis, Mo. The summers for 15 years of Miss Murfree's early life were spent among the mountains of E. Tenn., where much of the material of her stories was gathered; and about 1879 she began the series of powerful stories of Tennessee mountain life which caused her to be ranked as one of the most original and interesting of American novelists. Mr. Howells gave the earliest a place in the *Atlantic Monthly*, but Mr. T. B. Aldrich, succeeding Howells as editor, more particularly brought out the new writer. Her writings are: *In the Tennessee Mountains*, and *Where the Battle was Fought* (1884); *Down the Ravine*, and *The Prophet of the Great Smoky Mountains* (1885); *In the Clouds* (1886); *The Story of Keedon Bluffs* (1887); *The Despot of Broomsedge Cove* (1888); *His Vanished Star* (1894); *The Phantoms of the Footbridge* (1895); *The Mystery of Witchface Mountain* (1895); *The Juggler* (1897); *The Young Mountaineers* (1897); *The Bushwhackers* (1899); *The Story of Old Fort Loudon* (1899); *The Champion* (1902); *A Sceptre of Power* (1903); *Storm Centre* (1905); *The Frontiersman* (1905); *The Amulet* (1906); *The Windfall* (1907); etc.

MURFREESBORO, *mėr'frēs-bŭr-rō:* city, cap. of Rutherford co., Tenn., on Stone river and the railroad from Nashville to Chattanooga, almost at the centre of the state, on the w. side of its central elevated basin, 32 m. s.e. of Nashville. It is well built, of brick chiefly, has a fine court-house and public square, banks, manufactories, flour and saw mills, carriage factories, pork-packing establishments, cotton gins, and large trade in grain, cotton, and the productions of the fertile country around it. It was cap. of the state 1817–27. Pop. (1890) 3,739; (1900) 3,999; (1910) 4,679.

MUR'FREESBORO, Battle of; or **Battle of Stone River**: one of the severest and most bloody battles of the civil war, in proportion to the forces engaged. The town of M. had been occupied early in the summer of 1862 by a small Union force, and July 13 was taken by Gen. Forrest, and a Michigan regt. made prisoners. It soon became the centre from which Gen. Bragg operated with about 15,000 cavalry and over 30,000 infantry. Gen. Rosecrans moved from Nashville, 32 m. n.w. of M., late in Nov., with about 40,000 infantry and 3,000 cavalry, into a strong position near M., from which skirmishing began after nearly a month. Bragg having meanwhile sent his cavalry to threaten Rosecrans's communications. The first movements to bring Bragg to battle were made Dec. 26; and Dec. 31, after five days' sharp skirmishing, the Union line was formed w. of Stone river, Crittenden holding the left, Thomas the centre, and McCook the right; while Bragg's army was in position e. of the river, Breckenridge holding the right, Polk the centre, and Hardee the left. The sharp attack made by Crittenden on Breckenridge, on the morning of Dec. 31 was a favorable opening of the battle, but Hardee at the same time drove in McCook, compelling Rosecrans to draw in his lines to support his centre and right, with not only the sacrifice of his position, but with a loss of 28 guns. The result of this indecisive engagement was a vigorous attack by Bragg in force on the afternoon of Jan. 2, and a hotly-contested action, ending in the repulse of the Confederates with great loss, and their abandonment of M. Jan. 4. Bragg admitted a loss in the entire fight of 10,000, out of a force which he stated at 35,000, against, as he estimated, 70,000. Rosecrans estimated the Confederate force at 62,000, and stated his own at 43,000, of which he had 1,553 killed, 7,000 wounded, and 3,000 taken prisoners. Rosecrans took possession of M. Jan. 5, fortified it, made it his depot for supplies, and six months later advanced from it toward Chattanooga, upon which Bragg had fallen back.

MURGAB, or MURGHAB, *môr-gâb′:* river of central Asia, rising on the n. border of Afghanistan, in the Hindu Kush, immediately n. of the sources of the Heri (q.v.). The M. flows w., then n.w., and finally n., passing from among the mountains in which it has its source into the desert plains of Turkestan, where the volume of its water gradually diminishes, until it finally loses itself in a swamp in the sandy plain of Merv, after a course of about 400 m. In the upper part of its course it receives many tributaries, but none in the lower. The most noteworthy place on its banks is Merv (q.v.), or Meru (anc. *Antiocheia Margiana*), a town of Turkestan (now Russian), about 300 m. s.e. from Khiva. Merv was an important town in the days of the Seljuk dynasty, of which it was the cap., but is now very ruinous.

MURIACITE, n. *mū′rĭ-ă-sīt* [L. *murĭātĭcus*, pickled or lying in brine—from *murĭă*, brine, sea-water]: a term applied to the crystalline varieties of anhydrous sulphate of lime. MURIATE, n. *mū′rĭ-āt*, a salt formed by the combination of muriatic or hydrochloric acid with a base, as *muriate of soda*, or common salt. MU′RIAT′IC, a. *-ăt′ĭk*, from or resembling brine or sea-salt. MURIATIC ACID, an acid consisting of chlorine and hydrogen, obtained from common salt, emitted in a gaseous form from the craters of active volcanoes, and sometimes found in solution in crevices about their slopes; hydrochloric acid (q.v.).

MURIATIFEROUS, a. *mū′rĭ-ă-tĭf′ĕr-ŭs* [L. *murĭă*, sea-water; *fero*, I produce]: producing brine or sea-salt.

MURICALCITE, n. *mū′rĭ-kăl′sīt* [L. *murĭă*, sea-water; *calx* or *calcem*, lime]: a mineral consisting of the carbonates of lime and magnesia.

MURICATE, a. *mū′rĭ-kāt*, or MU′RICATED, a. *-kā-tĕd* [L. *murĭcātus*, full of sharp points—from *murex*, a shell-fish armed with sharp prickles]: formed with sharp points; covered with firm short points or excrescences.

MURIDÆ, n. plu. *mū′rĭ-dē* [L. *mus* or *mūrem*, a mouse]: family of rodent quadrupeds, containing many genera and a very large number of species, distributed over all parts of the world, and of which rats and mice may be regarded as typical examples. To this family belong also voles, lemmings, dormice, jerboas, marmots, etc. The M. are of the section of rodents having distinct clavicles. They have three or four molars on each side in each jaw, the molars at first furnished with rounded tubercles, which wear down till they exhibit mere roughened crowns. The typical M., and those most nearly allied to them, have scaly tails. Marmots, dormice, jerboas, etc., have hairy tails. There are great diversities of structure and habits among the M. All feed on vegetable food, but many do not refuse to eat animal substances.—The limits of the family M. are very differently stated by different naturalists. (See RAT: MOUSE: MARMOT: LEMMING: HAMSTER: JERBOA: VOLE.) MURINE, a. *mū′rĭn*, pert. to mice

MURIFORM, a. *mū'rĭ-fawrm* [L. *murus*, a wall; *forma*, a shape]: in *bot.*, wall-like, applied to tissues presenting the appearance of bricks in a wall.

MURILLO, *mū-rĭl'lo*, Sp. *mô-rē'lyo*, BARTHOLOMÉ ESTÉBAN: greatest Spanish eccles. painter: 1617–1682, Apr. 3; b. Seville, of humble parentage. After receiving some education, he was placed with his relative, Juan del Castillo, to study painting. Having saved a little money, which he made by painting religious pictures for exportation to S. America—literally buying his canvas by the large quantity and painting it by the square yard—he went to Madrid 1641, was favorably and most generously received by his celebrated townsman, Velasquez, and, through his influence, was enabled to study the *chefs-d'œuvres* of Italian and Flemish art in the royal collections. In 1645, he determined to return to Seville, though advised to proceed to Rome by Velasquez, who offered him letters from the king. After settling in Seville, he received numerous important commissions, and was soon acknowledged as the head of the school there. In 1648, M. married a lady of fortune; and establishing a handsome residence, his house was the resort of people of taste and fashion. The Acad. of Seville was founded by him 1660, but he filled the office of pres. only during the first year. He fell from a scaffold when painting in Cadiz on an altar-piece for the Church of the Capuchins, returned to Seville, and soon afterward died from the injury which he received. In early years he painted many pictures illustrative of humble life; in these, the manner was darker and less refined than that of his later pictures, which are mostly scriptural or religious pieces. In the Louvre, and in England, there are about 40 of his works. His *Immaculate Conception* in the Louvre was purchased 1852 for nearly $120,000. Chief among his masterpieces are usually reckoned *Moses Striking the Rock*, *Return of the Prodigal*, and *St. Elizabeth of Hungary*. Critics attribute to M. three different styles, the cold, the warm, and the vapory—belonging respectively to his earlier, middle, and later periods; though not definitely separable into these periods, as in each period all three styles appear. M.'s work is characterized by truthful delineation, masterly technique, and expressive sentiment, rather than by imaginative force, mental depth, or lofty spiritual beauty. Sir David Wilkie, who greatly admired and carefully studied the Spanish school, has remarked, in reference to it: 'Velasquez and Murillo are preferred, and preferred with reason, to all the others, as the most original and characteristic of their school. These two great painters are remarkable for having lived in the same time, in the same school, painted for the same people, and of the same age, and yet to have formed two styles so different and opposite, that the most unlearned can scarcely mistake them; Murillo being all softness, while Velasquez is all sparkle and vivacity.'—M. in his personal character was amiable, gentle, and sincere.

MURK, n. *mėrk* [Icel. *myrkr*, darkness; *myrka*, to darken: Bohem. *mrak*, darkness: Lap. *murko*, mist, fog]: in *OE.*, darkness; want of light. MURKY, a. *mėr'kĭ*, dark; wanting light; obscure; gloomy. MUR'KILY, ad. *-lĭ*. MUR'KINESS, n. *-nĕs*, the state of being dark or gloomy.

MURMUR, n. *mėr'mėr* [the representation of a sound like that of running waters, wind among branches of trees, the hum of bees, and the like: L. *murmurārĕ*, to give out a low murmuring or hollow sound: Gr. *mormurein;* It. *mormorare;* F. *murmurer*, to murmur]: a low, continually-repeated sound or sounds; a complaint uttered in a low, suppressed tone: V. to give forth or utter low, suppressed sounds; to complain. MUR'MURING, imp.: ADJ. giving forth low, suppressed tones, as a *murmuring* brook; uttering complaints in low, half-suppressed tones: N. the utterance of complaints in half-suppressed tones; low, confused noise. MURMURED, pp. *mėr'mėrd*. MUR'MURER, n. *-ėr*, one who complains or grumbles. MUR'MURINGLY, ad. *-lĭ*. MUR'MUROUS, a. *-ŭs*, attended with murmurs; exciting complaints.—SYN. of 'murmur, v.': to grumble; repine; lament; deplore; regret.

MURNER, *môr'nėr*, THOMAS: German satirist and opponent of the Reformation: b. Strasburg, 1475, Dec. 24; d. about 1536. He studied at the principal universities of Europe, devoting himself particularly to theology and philosophy, and early gained a reputation for ability, marred, however, by a quarrelsome disposition. He led an unsteady life, preaching for some time at Frankfort-on-the-Main and other places, but incurring generally the displeasure of his congregations by the coarse personalities of his sermons, and was successively expelled from Freiburg, Treves, and Venice. He became one of the most virulent opponents of the Reformation. Some of his writings against the Reformation were burned by order of the diet of Worms; and he was compelled to flee to Switzerland, whence he was in time likewise expelled. The latter part of his history is not known. In 1506, he had been crowned as poet laureate by the emperor Maximilian; and his *Narrenbeschwörung* (1512), of which his *Der Schelmenzunft* (1512) may be regarded as a continuation, is one of the most remarkable imitations of Sebastian Brant's celebrated satirical poem entitled *Narrenschiff*. He wrote *Chartiludium logice*, etc. (1507), and other Latin works; prepared a German version of Virgil and other translations; and was also regarded as the editor of *Eulenspiegel*. But he is chiefly remembered by his writings against Luther and the Reformation. His most celebrated satirical work is entitled *Von dem grossen Lutherischen Narren* (1522; new ed., 1848). Consult: Lappenburg, *Murners Eulenspiegel* (1854); Goedeke, *Murners Narrenbeschwörung* (1879); Kawerau, *Thomas Murner und die Kirche des Mittelalters* (1890).

MUR'PHEY, Archibald De Bow: American jurist: b. Caswell county, N. C., 1777; d. Hillsboro, N. C., 1832, Feb. 3. He was graduated from the University of North Carolina in 1799 and was for the three succeeding years professor of ancient languages there. He studied law and was admitted to the bar in 1802 and established a large practice. He was a member of the state senate in 1812-18 and proved himself an able legislator, advocating internal improvements and working earnestly to enlarge and improve the educational system of the state. In 1818, he was a judge of the superior court and in 1819-20 was a justice of the supreme court of North Carolina. He published: *Memoir of Improvements Contemplated, and the Resources and Finances of the State* (1819); *Reports of Cases in the Supreme Court of North Carolina in 1804-13 and 1818-19* (1821-6); etc.

MURPHY, *mŭr'fĭ*, Francis: temperance lecturer: b. Ireland, 1836, Apr. 24; d. Los Angeles, Cal., 1907, June 30. His family were in moderate circumstances, but about 1849 acquired a small fortune by inheritance, and began entertaining liberally. He first became intoxicated when 13 years old. Three years later, he determined to shake off the habit and seek a career in the United States. Within 6 months after reaching New York, his dissolute habits forced him to leave the city. He then went into the country, worked on a farm about a year, kept sober, married, and after saving some money went to Portland, Me., and leased a hotel and bar. In a few months he was drinking as badly as ever. He lost all his property, and, as a last attempt to cure him of drunkenness, some of his friends had him placed in jail. While there he became interested in the Sunday religious services, and 1870, Aug. 15, resolved never again to sell or drink another glass of liquor. On his release, he was invited to address a gospel temperance meeting in the Portland city hall, and he thus (1871, Apr.) entered on his well-known career as a temperance lecturer.

MUR'PHY, Henry Cruse: lawyer, statesman, and author: 1810, July 5—1882, Dec. 1; b. Brooklyn, N. Y. He graduated at Columbia College 1830; was admitted to the bar 1833; was assistant corporation counsel 1834, and soon afterward counsel and city attorney. He was an active writer and dem. political leader; one of the owners and editors of the Brooklyn *Eagle* 1841; mayor 1842; member of congress 1843-49; a leader in the state constitutional convention 1846 (again 1867); U. S. minister to Holland 1857, June 1—1861, June 8; in state senate six successive terms; was one of the founders of the new L. I. Hist. Soc. and of the Brooklyn city library, and president of the E. River Bridge Company. He collected a valuable library; was translator and editor of De Vries's *Voyage from Holland to America* 1632-44; *Broad Advice to the United Netherland Provinces* 1649;

Representation from New-Nether-Land 1650; *Journal of a Voyage to New York and a Tour in Several of the American Colonies* 1679-80 (by Jasper Dankers and Peter Sluyter, of Wiewerd, Friesland); and author of several works, among which were: *The Voyage of Verrazano; Memoir of Hermann Ernst Ludewig;* and *Anthology of the New Netherlands, or Translations from the Early Dutch Poets of New York, with Memoirs of their Lives.*

MUR'PHY, JOHN FRANCIS: landscape painter: b. Oswego, N. Y., 1853, Dec. 11. He went to New York 1875, entirely self-taught in art; exhibited at the National Acad. 1876; became member of the Society of American Artists; was elected 1885 associate of the National Acad., and full member 1887; took 2d Hallgarten prize 1885, for his *Tints of a Vanished Past;* and the Webb prize, Soc. of Amer. Artists, 1887. He has a studio in New York, works in oil, and is member of the Water-Color Soc. Among his works are: *Sunny Slopes,* 1879; *Upland Cornfield,* 1880; *Late Afternoon,* 1881; *Indian Summer,* 1886.

MURPHY, NATHAN O.: American politician: b. Jefferson, Maine, 1849, Oct. 14. He was educated in the public schools; was a teacher in Wisconsin 1866-9; removed to Arizona about 1870; engaged in mining, law practice, and railroad construction; was governor of the territory in 1892 and in 1898-1902; and in 1893 was elected territorial delegate to congress by the republican vote.

MURPHYSBORO, *mŭr'fĭz-bŭr-ō:* Ill., city, county-seat of Jackson county; on the Big Muddy river, and on the Mobile & O., the St. Louis V., and the Illinois C. railroads; about 140 miles south of Springfield. It is situated in an agricultural section, and nearby are coal-fields, timber, and building stone. The chief industrial establishments are foundries, machine-shops, flour and lumber mills, and brick and tile yards. There is a large trade in farm and dairy products, coal, and lumber. Pop. (1900) 6,463.

MURRAIN, n. *mŭr'rān* [Sp. *morriña,* a disease among cattle: OF. *morine,* the carcass of a dead beast: Icel. *morn,* murrain: Gr. *marainō,* I destroy]: an infectious and fatal disease among cattle: ADJ. infected with murrain: INT. used as an imprecation, as, 'murrain take thee!' *Note.*—A term formerly applied to many forms of cattle-plague; now restricted to the APHTHA EPIZOOTICA, *ăf'thă ĕp'ĭ-zō-ŏt'ĭk-ă,* or epizootic aphthæ, commonly known as the foot and mouth disease.

MUR'RAIN: generic term loosely used to designate a variety of diseases of domestic animals; but now more correctly restricted to the vesicular epizootic (*Aphtha epizootica*), popularly known as the foot and mouth disease. It is a contagious, eruptive fever, affecting cattle, sheep, pigs, and poultry; but rarely communicable to

horses or men. It is characterized by the appearance of little bladders or vesicles in the mouth, on the lips, gums, and tongue; on the udder, and in the interdigital space; causing inability to eat, and drivelling of saliva, heat and swelling of the udder, and lameness. The disorder runs a fixed and definite course, usually in eight or ten days. Good nursing, comfortable lodgings and a liberal supply of soft, easily digestible food are the chief requisites for speedy recovery. A laxative may be given if needed. The mouth may be washed out twice daily with a mild astringent solution, which may be made with half an ounce of alum, oxide of zinc, or sugar of lead, to the quart of water. The udder in milch cows, in which the complaint is usually most serious, should be bathed with tepid water before and after milking, which must be attended to very regularly; and the feet kept clean, and washed occasionally with the lotion used for the mouth. See CATTLE PLAGUE.

MURRAY, *mėr'ĭ*, ALEXANDER: 1755—1821, Oct. 6; b. Chestertown, Md.: U. S. naval officer. He went to sea at an early age, and had command of a vessel at the age of 18; was commissioned lieutenant in revolutionary navy 1776; for lack of a vessel served as soldier in battles of White Plains and Flatbush, and was promoted captain; was put in command of a privateer at the close of 1777; was captured and exchanged; volunteered as lieutenant on frigate *Trumbull,* and was taken prisoner after sharp fight and severe wounding, off the capes of Delaware; on exchange and recovery took service as 1st lieutenant on frigate *Alliance,* and at end of the war had been in 13 engagements (sea and shore). At organization of the Amer. navy, 1798, he was commissioned captain, and had command of the 20-gun corvette *Montezuma,* and later of the frigates *Insurgent* and *Constellation.* He served in the W. Indies, and 1820 with a squadron in the Mediterranean, where his own ship alone fought and drove 17 Tripolitan gun-boats. His last post was the command of the navy-yard at Philadelphia, until his death, when he ranked as the senior officer of the navy.

MUR'RAY, ALEXANDER: U. S. naval officer: 1816, Jan. 2—1884, Nov. 10; b. Philadelphia; son of Alexander Murray (1755-1821). He entered the navy 1835, Aug. 22; became passed midshipman 1841; lieutenant 1847; commander 1862; captain 1866; commodore 1871; rear-admiral 1876, Apr. 26; retired 1878, Apr. 30. He served in the Mexican war 1846-7, on the e. coast of Mexico, taking part in the capture of Alvarado, Tampico, Tobasco, Tuxpan, and Vera Cruz, and being wounded at the first. In command of the steamer *Louisiana,* 1861-2, he defeated the *Yorktown* off Newport News, fought the battle of Roanoke Island, and destroyed the Confederate fleet under Lynch. He had charge of the naval forces at Kingston, N. C., and the expedition up York and

Pamunkey rivers, destroying 27 vessels, 1862, May. He served in the N. Car. sounds 1863, did special duty 1866-7, was light-house inspector 1873-76; and after retirement was on the naval board.

MUR'RAY, DAVID, PH.D., LL.D.: educator: b. Delhi, N. Y., 1829, Oct. 15; d. New Brunswick, N. J., 1905, Mar. 6. He graduated at Union Coll. 1852; was tutor 1853, then professor of mathematics, and 1857-63 principal of Albany Acad.; professor of mathematics and astronomy at Rutgers Coll. 1863-73; superintendent of education at Tokio for the Japanese govt. 1873-79, establishing for Japan an educational system; represented Japanese educational interests at the Philadelphia centennial 1876; and from his return home became secretary of the board of regents of the Univ. of N. Y. in Albany. He published *Manual of Land Surveying* (1869); *Story of Japan* (1894); *History of Education in New Jersey; History of Delaware County, N. Y.;* etc.; contributed (1872) to Mori's *Education in Japan,* and edited (1876) *Outline History of Japanese Education.*

MURRAY, DAVID CHRISTIE: English novelist: b. West Bromwich, Staffordshire, England, 1847, Apr. 13; d. London, 1907, Aug. 1. He was educated privately and his first journalistic work was done on the Birmingham press. He removed to London in 1873, where he wrote for the *Daily News* and for the *World,* and in the Russo-Turkish war he was special correspondent for the *Times.* His first novel, *A Life's Atonement,* was published in 1879, and he afterward devoted himself to chiefly fiction. Among his numerous and popular novels are: *Way of the World* (1884); *The Weaker Vessel* (1888); *A Rising Star* (1894); *This Little World* (1897); *Despair's Last Journey* (1901); etc.

MURRAY, GEORGE HENRY: Canadian politician: b. Grand Narrows, Nova Scotia, 1861, June 7. He was educated in Grand Narrows and in Boston University and was admitted to the bar in 1883. He was appointed to the legislative council of Nova Scotia in 1889 and in 1896 became premier and provincial secretary of Nova Scotia under a Liberal administration. He was elected to the dominion parliament in 1897.

MURRAY, GRENVILLE ('EUSTACE CLARE'): English journalist: b. 1824; d. Passy, France, 1881, Dec. 20. He was in the diplomatic service from 1851 to 1868, but was generally in discord with his superiors or with British residents. From 1869 he lived in France, where he was Paris correspondent of the *Pall Mall Gazette* and the *Daily News,* and an early contributor to the *Cornhill.* He was one of the ablest journalists of his time. A voluminous writer, among his works were: *The Roving Englishman,* chapters of travel (1854); *Embassies and Foreign Courts* (1855); *The Member for Paris* (1871); *Young Brown* (1874); *Turkey* (1877); *The Russians of*

To-day (1878); *Under the Lens: Social Photographs* (1885).

MURRAY, James: Scottish soldier: b. about 1725; d. 1794. He was a son of the fourth Lord Elibank, and about 1740 entered the army; came with his regiment to America in 1757; at the siege of Louisburg (1758) commanded a brigade; and in the battle on the Heights of Abraham 1759, Sep. 13, led the left wing of the army under Wolfe. In 1760, he held Quebec against superior numbers of the French, in the same year served with Amherst in the reduction of Montreal, and was made governor of Quebec. From 1763 to 1766 he was governor of Canada; in 1774, became governor of Minorca; was compelled to surrender Fort Saint Philip to the French, in 1782, after a heavy siege, and upon returning to England was court-martialed and acquitted. In 1783, he was made a full general in the British army. Consult: Parkman, *Montcalm and Wolfe* (1884, 1898).

MURRAY, James Augustus Henry, M.A., PH.D., LL.D., D.C.L., LITT.D.: Scottish philologist and lexicographer: b. Denholm, near Hawick, Roxburghshire, 1837. He was graduated B.A. of London University, from 1855 till 1858 was an assistant master in Hawick Grammar-school, becoming in the latter year master of Hawick Academy, for a few years was foreign correspondent to the Oriental Bank in London, and from 1870 till his removal to Oxford in 1885 a master at Mill Hill School. He was president of the Philological Society in 1878-80 and 1882-4. Since 1879 Dr. Murray has been general editor of the *New English Dictionary on Historical Principles*, the great work issued under the auspices of the Philological Society from the Clarendon Press, Oxford. Other works by him are: *A Week among the Antiquities of Orkney* (1861); *Dialects of the Southern Counties of Scotland* (1873); *Synopsis of Paley's Horæ Paulinæ* (1872); *The Romance and Prophecies of Thomas of Ercildoune* (1875); the article *English Language* in the *Encyclopædia Britannica* (9th ed.), and many papers on the archæology, natural history, geology and language of the border counties of Scotland. In 1884, he was awarded a civil list pension of £270 per annum.

MURRAY (or Moray), James Stewart, Earl of; sometimes called the 'Good Regent,' Regent of Scotland: 1533—1570, Jan. 21 (regent 1567-70); illegitimate son of James V. of Scotland, by Margaret, daughter of John, fourth Lord Erskine, afterward wife of Sir Robert Douglas of Lochleven. He was made commendator of the priory of St. Andrews 1538, and subsequently of the priory of Mâcon (in France). He joined the Reformers 1556, and almost immediately became the chief of the Prot. party in Scotland. In 1561, he was sent to France, to invite Queen Mary to return to her kingdom; and on her arrival he became her prime minister and adviser.

1562, Feb., he was created Earl of Mar; but that earldom having been claimed by Lord Erskine, the title of Earl of Moray was conferred on him instead, a few months afterward. Strongly opposed to the marriage of Mary with Lord Darnley, 1565, July 29, he endeavored to oppose it by an appeal to arms; but he was easily put to flight by the queen, and took refuge in England. He did not return to Edinburgh till 1566, Mar. 10, the day after the assassination of Riccio, in which he was an accomplice. 1567, Apr., he went to France, but was recalled in Aug. by the lords in arms against the queen, when he found Mary a prisoner in Lochleven, and himself appointed regent of the kingdom. After the escape of the queen, he defeated her forces, 1568, May 13, at Langside, near Glasgow, and was afterward one of the commissioners sent to England to conduct the negotiations against her. By his prompt and vigorous measures, zeal, and prudence, he succeeded in securing the peace of the kingdom, and settling the affairs of the church, but was assassinated at Linlithgow by Hamilton of Bothwellhaugh, one of the partisans of the queen.

MUR'RAY, JOHN: clergyman: 1741, Dec. 10—1815, Sep. 3; b. Alton, Hampshire, Eng. He was resident in Ireland 1751-60; was converted to Methodism under Whitefield and the Wesleys, and was an occasional preacher; returned to England 1760. He adopted doctrines taught as Universalism (in salvation) by James Relly, and was excommunicated from Whitefield's tabernacle, London; came to America 1770; and Sep. 30, at Good Luck, N. J., began preaching the Universalist doctrine. This doctrine had been preached in America by the Rev. George de Benneville, as early as 1741; by an Episc. clergyman, of Charlestown, S. C., and in 1762 by the celebrated Dr. Jonathan Mayhew, pastor of the West Church, Boston, 1747-66, whose rationalism caused his exclusion from the Boston assoc. of Congl. ministers; but it was from the preaching of Murray that the doctrine became the foundation and rule of a body of churches. He preached at Newport, R. I.; Boston, Mass., Portsmouth, N. H., and other places in New England, meeting much opposition, and at times in peril of popular violence. He settled in the latter part of 1774 at Gloucester, Mass., and the usual prejudice took the form of suspicion that he was an English spy. A vote of the town authorities to send him away was secured, but its execution was prevented by the influence of his friends. He served as chaplain to the Rhode Island troops before Boston, 1775, and was initiated into American patriotism by his intimacy with such officers as Greene and Varnum, who used their influence on his behalf with Washington when the other chaplains sought his removal. Illness, however, caused him to leave the service, and return to Gloucester, where he founded the first Universalist congregation in America 1780. In 1783, he carried to a

successful issue a suit to recover property which the first parish of Gloucester had appropriated under the plea that the Universalists had no standing in law. His activity in the making of the denomination caused him to be styled the 'father of Universalism.' He made a visit to England 1788, and 1793 became pastor of a Univ. church in Boston, of which he had charge until his death. The definite creed of Murray was that Christ's atonement had literally taken away the sin of the whole human race. He thus made an alteration in the evangelical creed, rather than substituted for it the rationalism of Mayhew. He held to the Trinitarian doctrine, and to the existence of a personal Devil; and his view of salvation was qualified by the interposition of a scheme of redemption carried out in the future by degrees of punishment before the salvation would be effected.

MUR'RAY, JOHN: name of three generations of English publishers, associated with the palmiest days of English literature in the 18th and 19th centuries.

JOHN M'MURRAY, founder of the house (about 1745—1793, Nov. 16; b. Edinburgh), obtained a commission in the Royal Marines 1762, and 1768 was still 2d lieutenant, when, disgusted with the slowness of promotion, and seeking a more active career, he purchased the bookselling business of Mr. Sandby, opposite St. Dunstan's Church, London; and, dropping the Scottish prefix, became a bookseller and publisher at '32 Fleet Street.' He brought out the *English Review*, and published the elder Disraeli's *Curiosities of Literature*, etc. He was succeeded in due time by his son of the same name.

JOHN MURRAY (1778—1843, son of John Murray), was a minor at his father's death. Succeeding to the business, he made one of his earliest hits with Mrs. Rundell's Cookery-book, which proved to be a mine of wealth—more productive, perhaps, than *Childe Harold* itself. He became connected with Thomas Campbell and Sir Walter Scott; and 1808-9 projected the *Quarterly Review*, a Tory organ, in opposition to the Whig *Edinburgh Review*, then in the height of its influence. The first number of the Quarterly was published 1809, Feb. 1, under the editorship of William Gifford. The new periodical was completely successful, and brought Murray into communication not only with the chief literati, but also with the Conservative statesmen of the time. A still more fortunate arrangement was that with Lord Byron, whose *Childe Harold* was published by Murray 1812. Murray then removed from Fleet street to Albemarle street. Here Byron and Scott first met, and here Southey made the acquaintance of Crabbe. Almost all the literary magnates of the day were 'four o'clock visitors' in Albemarle street. Byron's pleasant verse has described the scene:

> 'The room's so full of wits and bards,
> Crabbes, Campbells, Crokers, Freres, and Wards.'

Murray's dinner-parties included politicians and states-

men, as well as authors, artists, and dilettanti. He paid Byron nearly £20,000 for his works; and his dealings with Crabbe, Moore, Campbell, and Irving were princely. Murray was succeeded by his son of the same name.

JOHN MURRAY (b. 1808; d. 1892, Apr. 2) was educated first at the Charter House, afterward at Edinburgh Univ. The age of Byron had gone by, when, 1843, he succeeded to the business of his father and grandfather. A more practical and realistic age had succeeded, and the 'Home and Colonial Library,' issued to contest European and American cheap reprints of English books, was the precursor of the cheap railway and other literature of the present day. A lively and vigorous competition, arising out of the wants of a new era, somewhat altered the relation of the great publishing houses. That of Albemarle street no longer ranked first in extent and variety of transactions; but many of the greatest works in history, biography, travel, art, and science were issued from the Albemarle street press under the régime of the third Murray. Among his successes were Dr. Livingstone's *Travels* and *Last Journals,* Smiles's *Life of George Stephenson,* and Darwin's *Origin of Species by Natural Selection.* On his death he was succeeded by the fourth John Murray (b. 1851), who edited Gibbon's *Autobiography.*

MURRAY, Sir JOHN, PH.D., LL.D., D.SC., F.R.S.: Canadian scientist: b. Coburg, Ontario, 1841, Mar. 3. He was educated at Edinburgh University. In 1867, he accompanied for biological purposes an expedition to Spitzbergen and Greenland, and in 1872 was appointed one of the scientific staff of the Challenger expedition. From 1876 till 1882 he was chief assistant-editor of the scientific reports published in connection with that voyage, and in the latter year became editor-in-chief. He also accompanied several other scientific exploring expeditions in various parts of the world. Besides editing the Challenger reports a large number of papers on geographical, oceanographical, and biological subjects. He has received many honors from learned bodies, including the Royal Society's royal medal, the Founder's medal of the Royal Geographical Society, and the Cuvier prize of the Institute of France.

MURRAY, JOHN CLARK, LL.D.: Canadian educator: b. Paisley, Scotland, 1836, Mar. 19. He was educated in the universities of Edinburgh and Göttingen and in 1862 accepted the chair of philosophy in Queen's University, Kingston, Canada. Since 1872 he has been professor of moral philosophy in M'Gill University, Montreal. He has published: *Outlines of Sir W. Hamilton's Philosophy* (1870); *The Ballads and Songs of Scotland* (1874); *A Handbook of Psychology* (1885); *An Introduction to Ethics* (1901); *He That Had Received the Five Talents* (1904); *An Introduction to Psychology* (1904); etc.

MURRAY, JOHN O'KANE: American historian: b. Glenariffe, Ireland, 1847, Dec. 12; d. Chicago, Ill., 1885, July 30. He removed to the United States, where he became a physician and author of some repute. His most important work was a *Popular History of the Catholic Church in America* (1876), and among his other books are: *The Catholic Heroes and Heroines of America* (1878); *Lessons in English Literature* (1883); etc.

MURRAY, LINDLEY: grammarian: 1745—1826, Feb. 16; b. Swatara, Lancaster county, Penn. He was educated at an academy of the Society of Friends, and, on his father's removal to New York, was placed in a counting-house, from which he left to attend school in N. J. He then studied law, and was admitted to the bar at the age of 21, and commenced a good practice. During the revolutionary war, he engaged in mercantile pursuits, and accumulated wealth. His health failing, he went to England and purchased the estate of Holdgate, near York, where he applied himself to literary pursuits. In 1787, he published *Power of Religion on the Mind*, which passed through 17 editions. His *Grammar of the English Language* was issued 1795, and was followed by *English Exercises*, the *Key*, the *English Reader*, *Introduction and Sequel*, and a *Spelling Book*. There can be no stronger indication how entirely the systematic study of the English language was—until recent years—neglected by scholars, than the fact that Murray's Grammar was for half a century the standard text-book throughout Britain and America.

MURRAY, NICHOLAS, D.D.: 1802, Dec. 25—1861, Feb. 4; b. Ireland. He came to America 1818; became a convert to Protestantism, graduated 1826 from Williams College, and 1829 Princeton Theol. Seminary. He was ordained a Presb. minister, and served as pastor in Wilkesbarre and Kingston, Penn., and Elizabethtown, N. J. He served the church in many other capacities, as moderator of the general assembly 1850; trustee of Princeton Seminary and Williams College—from the latter receiving the degree D.D. 1843. The controversy that he waged in the *New York Observer* with Abp. Hughes of the Rom. Cath. Church 1847, aroused much attention, as did his lectures against that church in this country, and in Ireland, which he visited 1851 and 60. He published a number of vols. historical, biographical, polemical, and devotional. He died at Elizabethtown, N. J.

MURRAY, ROBERT, M.D.: army surgeon: b. Howard county, Md., 1822, Aug. 6. He graduated at Jefferson Med. Coll. 1845; appointed assistant surgeon U. S. army 1846; obtained rank of captain 1851; major and surgeon 1860, and served through the civil war; obtained the brevets of lieutenant-colonel and colonel 1865, for meritorious service; made lieutenant-colonel and medical purveyor 1866; colonel and surgeon 1876; brigadier-general and surgeon-general 1883; and retired 1886.

MURRAY, William. See Mansfield, William Murray, Earl of.

MURRAY, William Henry Harrison: author: b. 1840, Apr. 26, Guilford, Conn.; d. there 1904, Mar. 3. He graduated at Yale 1862; was licensed to preach 1863; became pastor of the First Church (Congl.), Greenwich, 1864-8; and in Meriden, Conn.; at Park Street Church (Congl.), Boston, 1868-73; was a strikingly original preacher. He gave Sunday evening free discourses in Boston Music Hall 1869-73; was in great demand as a lecturer; had considerable note for his interest in the matters represented by his books, *Camp Life in the Adirondack Mountains* (1868), and *The Perfect Horse* (1873). He resigned his Park street pastorate 1874, and for a time conducted an independent movement, on the suspension of which he applied himself to business, lecturing, and authorship, entirely apart from his earlier religious and ministerial associations. He published *Music Hall Sermons* (1870-3); *Words Fitly Spoken* (1873); *Sermons from Park Street Pulpit* (1874); *Adirondack Tales*, 6 vols. (1877); *How Deacon Tubman and Parson Whitney Kept New Year, and Other Stories* (1887); and *The Story of Mamelons*, and *Daylight Land* (1888).

MURRAY: the largest river of Australia, rising in the Australian Alps, its sources being partly in New South Wales, partly in Victoria. It flows for a long distance westward, forming the boundary between these two colonies, then passes into South Australia, where it takes a southern direction, and falls into the Indian ocean at Encounter bay, 39 m. s.e. of Adelaide, after passing through a large shallow sheet of water called Lake Alexandrina. Its total length is about 1,300 m. Its chief affluents are the Murrumbidgee and Darling. It is navigable by light draft steamers in the wet season, for the greater part of its course to Albury, 190 m. n.e. of Melbourne.

MURRAY BAY, or Malbaie: a village of Charlevoix co., Quebec, Canada, on a bay of the Murray estuary, near the n. bank of the St. Lawrence river, 90 m. e. of Quebec. It has lumber industries, and its dependent suburbs, Pointe à Pic and Cap à l'Aigle, at each end of the bay, are popular summer resorts, the surrounding country being very attractive and affording angling, rowing, bathing, and other facilities. Steamboats connect with Quebec. During the Revolutionary war, Murray bay was a station for United States prisoners of war. Pop. (1901) 826.

MURRE, n. *mėr:* a sea-bird, the little auk.

MURREY, a. *mŭr'rĭ* [OF. *morée;* Sp. *morado,* mulberry-colored—from L. *morum,* a mulberry]: of a dark-red color; mulberry-colored.

MURRHINE, n. *mŭr'rĭn* [L. *murrhĭnus,* belonging to

the stone murrha—from *murrha*, a stone of which costly vessels are made]: among the *ancients*, a name applied to a delicate sort of ware of great value and beauty.

MURRION, n. *mŭr'rĭ-ŏn.* See MORION.

MURSHIDABAD, *môr-shĭ-dâ-bâd':* town of India, capital of the British district of Murshidabad in Bengal proper; on the left bank of the Bhagratti, a branch of the Ganges, about 124 m. n. of Calcutta. On the opposite side of the river stands Mahinagar, usually reckoned a part of Murshidabad. The town occupies a great space, several miles in length and breadth, but the buildings are mostly of mud. It contains two palaces: one old and gloomy; the other, constructed after the European style, and of great beauty, was completed 1840. Situated on the most frequented route by water from Calcutta to the Northwest Provinces, the trade of Murshidabad is important. Formerly, it was capital of Bengal, and so wealthy that Clive compared it with London. Pop. about 28,500.

MURTHER, n. *mėr'thėr:* an old spelling of MURDER, which see.

MURZA, n. *mėr'zā* [Pers. *mīrzā*, prince; Ar. *mir*, chief, leader]: second grade of Tartar nobility.

MURZUK'. See FEZZAN.

MUSACEÆ, *mū-sā'sē-ē:* natural order of endogenous plants, largest of herbaceous plants, generally destitute or almost destitute of true stems, yet resembling trees in appearance, and sometimes rivalling palms in stateliness; the long sheathing bases of the leaf-stalks combining to form a false stem. The blade of the leaf has many fine parallel veins proceeding from the mid-rib to the margin. The flowers are congregated on spadices protected by spathes. The fruit is either a 3-valved capsule or fleshy.—The species are not numerous; they are natives of warm climates, in which they are widely distributed, and are of great value to the inhabitants of tropical countries; the fruit of some, particularly of the genus *Musa*, being much used for food, while the fibres of the leaves are employed for cordage and for textile purposes. See PLANTAIN; BANANA; ABACA. A very interesting plant of the order musaceæ is the TRAVELLER'S TREE (q.v.) of Madagascar.

MUSÆUS, *mū-sē'ŭs:* one of the ancient Greek poets of the mythic period, an almost fabulous personage, said to have been son of Eumolpus and Selene; according to others, son and pupil of Orpheus. To him was ascribed the introduction of the Eleusinian and other mysteries into Greece, and the ordering of many religious rites. He was among the ancients also the reputed author of a number of poems, oracles, purificatory verses, a war of the Titans, a theogony, hymns, etc.; but of the few verses which remain the authenticity is very doubtful, as is in-

deed his individuality itself.—A later MUSÆUS, who lived probably in the 5th c. of the Christian era, was author of a very pleasing amatory poem, in Greek, *Hero and Leander*, discovered in the 13th c., of which the first edition was published by Aldus Manutius about 1494, and of which there have been many subsequent editions.

MUSÆUS, *mô-zā'ûs*, JOHANN KARL AUGUST: German writer: 1737—1787, Oct. 28; b. Jena, where he studied theology. He was nominated to a country church, but prevented from entering upon the cure committed to him by the opposition of the peasantry of the parish, who refused to receive him on the ground that he had been once seen to dance. In 1763, he received the appointment of tutor to the pages at the ducal court, and 1770 he became professor at the Weimar Gymnasium. His first literary production, 1760, was a parody of Richardson's *Sir Charles Grandison*, which was at that time extravagantly admired in Germany. The success of this satirical squib was complete; but as literary fame brought little pecuniary reward, Musæus was compelled to gain his living by other means than writing; and an interval of more than 18 years elapsed before he found leisure to reappear as an author. In 1778, he published *Physiognomischen Reisen*, a good-natured yet striking satire on the absurd uses to which the Germans had turned Lavater's system. This, like his previous work, was pre-eminently successful; and he was encouraged to lay aside his incognito, and continued his authorship. In 1782, appeared his charming version of German folk-lore, *Volksmärchen der Deutschen*, which professing to be merely a collection of popular tales noted down from the lips of illiterate old country people, was tinctured with such genial humor, quaint fancy, and strong sense, that they have become a classical popular work of their kind. His satirical sketches, *Freund Heins Erscheinungen in Holbein's Manier* (Winterthur 1785), maintained his reputation. His posthumous writings were edited 1791 by his relative and pupil, A. V. Kotzebue. Musæus's style was correct, elegant, and flexible.

MUSCADEL, n. *mŭs'kă-dĕl*, or MUS'CADINE, n. *-dĭn* [see MUSCATEL]: a rich grape—known in the extreme southern states as the Bullitt grape—also the wine made from it: a fine kind of pear. Also ADJ.

MUSCÆ VOLITANTES, *mŭs'sē vō-lĭ-tăn'tēz* [L. flitting flies]: ocular spectra, which appear like flies on the wing, or floating black spots before the eyes. Whoever will look through a minute pin-hole in a card at the clear sky may see floating before his sight a number of translucent tubes or fibres, and many little beads, of which some are separate, some attached to the tubes, and some apparently within them. Some of the tubes or fibres are straight, others looped or twisted, others forked. All these objects are bright in the middle,

and bounded by fine black lines, beyond and parallel to which may be seen an appearance of colored lines or fringes. The doublings and crossings of the loops or knots in the twisted fibres appear as black points. Though the eye be fixed, these bodies change their position with greater or less rapidity. Now, in ordinary light and vision all these objects are imperceptible, unless the knots or fibres happen to be larger than usual, when they constitute muscæ volitantes. These are caused by the shadows of the cells in the vitreous humor, and are harmless and not significant of any defect of vision. They should not be confused with permanent black spots (scotomata) which are points in the retina which are insensible to light, and are therefore symptomatic of danger to vision. To decide, then, whether the muscæ volitantes are or are not indicative of danger, the patient should fix his eye on a white surface (as a sheet of letter-paper) after a sudden shake of the head; if they are seen to move, they are innocent.

MUSCARDIN, n. *mŭs'kâr-dĭn* [F. *muscardin:* It. *moscardino*]: the dormouse.

MUSCARDINE, n. *mŭs'kâr-din* [F.], (*Botrytis Bassiana*): silk-worm rot; fungus (see BOTRYTIS) which grows on silk-worms, and often kills them in great numbers; named from fancied resemblance of the dead caterpillar to a little cake or a kind of pastille (see GATTINE). The fungus consists of erect branching threads, with clusters of spores at the end of short lateral branches. The spores of this fungus germinate even on healthy silk-worms, and in circumstances otherwise most favorable to health. They germinate also on the caterpillars of other lepidopterous insects. When this pest appears among silk-worms, its progress cannot be checked by any means known. For prevention, it is most important that the silk-worms be not overcrowded.

MUSCARIN: a coal tar color introduced by Durand and Hugenin, and having the empirical formula $C_{18}H_{15}N_2O_2Cl$. It is a brownish violet powder, slightly soluble in cold water, but dissolving readily in hot water with the formation of a violet-blue solution. Powdered zinc decolorizes its aqueous solution, but the color returns upon exposure to air. Muscarin produces a blue color upon cotton that has been mordanted with tannin and tartar emetic.

MUSCARINE: an alkaloid having the chemical formula $C_5H_{15}NO_2$, and occurring in certain mushrooms, notably in the 'fly agaric' (*Agaricus muscarius*). It is also formed in the putrefactive decay of flesh. It may be obtained in the form of deliquescent crystals which are without taste, and insoluble in ether, though readily soluble in water and in alcohol. Solutions of the alkaloid are strongly alkaline, and precipitate ferric and cupric salts in the form of hydrates. Muscarine is exceedingly

poisonous. It contracts the pupil of the eye, slows the pulse by prolonging the diastolic state of the heart, and induces salivation, vomiting, intestinal spasms, and general muscular weakness, followed by death. The 'fly agaric' takes its name from the fact that flies that alight upon it are killed, either by the muscarine or by another alkaloid, neurine, which the fungus also contains.

MUSCAT, n. *mŭs'kăt:* same as MUSCATEL, which see.

MUSCAT, *mŭs-kăt'*, or correctly MASKÂT: independent Arab state, forming the sea-coast of Omân, eastern Arabia. It extends from the Strait of Ormus to the island of Moseirah, and nowhere exceeds 150 m. in width. The coast and interior are both sterile, but the country is studded with very fertile oases. The capital is Muscat.—The independence of Omân dates from 751, when the people elected a sovereign of their own. For 900 years the Imaums were elected for personal merit; afterward from members of a ruling family. Muscat was taken by Albuquerque 1507, and remained in the hands of the Portuguese till 1648, when the Arabs recovered possession. The Imaums afterward made extensive conquests in eastern Africa, including Zanzibar, Mombas, Quiloa, etc. In 1798, they acquired possession of the coasts of Laristan and Mogistan, the islands of El Kishim and Ormus, and the town of Bender Abbas in Persia, paying to the shah a rent or tribute of 6,000 tomans. The state was very prosperous under the wise and mild sway of Said Seid, the late Imaum. He ascended the throne 1803, at the age of 16, and reigned till his death 1856. He was long a faithful ally of England. In 1854, the Imaums were driven from their Persian dependencies, which in their opinion belonged to them in perpetuity, so long as they paid the rental. They recaptured Bender Abbas, but in consequence of English interference, they were compelled to conclude a treaty with Persia 1856, Apr. This is said to have broken the heart of the old Seid, who died 1856, Oct. 19. He appointed his son Majid to succeed him in Zanzibar, and his son Thuwany to succeed him in Muscat. The latter was murdered by his son Salim 1868, who reigned for a short time, but was driven out by his uncle, Sayed Tuky. In consequence of the unsettled state of affairs in Muscat, Persia assumed the government of Bender Abbas and the Persian coast territory. See ZANZIBAR WAHABIS.—See *History of the Imaums and Seyids of Omân,* by Sahibibn-Razik, from the Arabic, by Rev. G. P. Badger Markham's *History of Persia* (1874).

MUSCAT', or correctly MASKAT: chief town in the state of Muscat and in the province of Orman, eastern Arabia. It is on the Persian gulf, a fortified town, surrounded with gardens and date-palms. It has a very good harbor, which, in winter, is reckoned the best refuge in the Indian ocean; and is a most important

centre of trade, where the productions of Europe, of Africa, and of the East are exchanged. The principal exports are Arabian coffee and pearls obtained from the Persian gulf; but wheat, dates, raisins, salt, sulphur, drugs, and horses also are exported. The climate is not healthful, and summer heat is extreme. The town presents a decayed appearance; its streets are narrow and filthy, and its houses mean. The people are of mixed nationalities of Africa, Arabia, and India; but the government is well and justly administered. Pop. estimated from 25,000 to 60,000.

MUSCATEL, n. *mŭs'kă-tĕl,* also MUS'CADEL, n. *-dĕl,* and MUS'CADINE, n. *dīn* [mid. L. *muscatellus,* the tree; *muscatellum,* the wine—from *musca,* a fly—so named from flies and bees being attracted by the fruit or its flowers; F. *muscadel*—from *mouche,* a fly: It. and Sp. *moscatello*—from *mosca,* a fly. Skeat gives derivation from O. It. *moscato,* perfumed with musk—O. It. *musco,* musk—fr. L. *muscus,* musk: see Latham]: a very rich grape, and the wine made from it; the grapes dried on the vine for fine table-raisins. Also, a rich pear. The name muscatel is given to many kinds of sweet and strong French and Italian wines, white or red; among the finest are the white Rivesalt and red Bagnol wines from Roussillon, and the Lunel from the Pyrenees, the Lacrymæ Christi and Carigliano of Naples, etc.

MUSCATINE, *mŭs-ka-tēn':* city, capital of Muscatine co., Ia.; on the Mississippi river, and the Chicago, Rock Island & Pacific, the Iowa Central, and the Burlington, Cedar Rapids & Northern railroads; 30 m. s. by w. of Davenport, 220 m. w.s.w. of Chicago. It is on the rocky bluffs at the great bend of the river, and commands a large trade. It is situated in a fertile agricultural region in which there is considerable woodland, and Muscatine island, just below the city, is noted for its watermelons. The industrial establishments consist of foundries and machine shops, flour and oatmeal mills, pickle works, brick and tile works, box and button factories, rolling mills, potteries, canneries, lead works, packing-case factories, lumber mills, sheet iron, boiler and engine works, carriage and wagon works, etc. The city contains public and parish schools, the Musser Library, several charitable institutions, churches, banks, etc. The government is vested in a mayor, who holds office two years, and a city council. The school board, treasurer, assessor, police judge, and wharf master are elected by the people. The waterworks are owned and operated by the city. Muscatine was settled in 1833 and was incorporated in 1839. Pop. (1900) 14,073; (1910) 16,178.

MUSCHEL-KALK, *mûsh'ĕl-kâlk* [Ger. *mushel,* shell; *kalk,* lime]: middle member of the Triassic, or New Red Sandstone period, the beds of which are entirely absent from the British strata. Being typically developed in

Germany, the German name has been universally adopted to designate them. They consist of (1st) a series of compact, grayish, regularly-bedded limestone, more than 300 ft. thick; (2d) alternations of limestone, dolomite, marl, gypsum, and rock-salt, nearly 300 ft. thick. The paleozoic Goniatites are replaced by the Ceratites, a remarkable link between them and the Secondary Ammonites. Ceratites are distinguished by the few small denticulations of the inner lobes of the suture. The heads and stems of Lily encrinites (*Encrinus*) also are abundant in these strata, and the remains of ganoid fish have been found.

MUSCICAPIDÆ, *mŭs-ĭ-kăp'ĭ-dē:* family of birds of order *Insessores* and tribe *Dentirostres,* of which the greater number receive the popular name Fly-catcher (q.v.). The limits of the family are very variously defined by different ornithologists. The Muscicapidæ are inhabitants mostly of the warmer parts of the world, in which they are very widely diffused. The species are very numerous.

MUSCIDÆ, *mŭs'ĭ-dē:* family of dipterous insects, having a short, thick, membranous proboscis, geniculated at the base, entirely retractile so as to be concealed within the mouth, and terminated by two large lobes (see HOUSE-FLY), the antennæ three-jointed; the thorax with a transverse suture. The species are very numerous, and universally distributed. The well-known house-fly, blow-fly, etc., are specimens. The larvæ are Maggots (q.v.). Although some of the Muscidæ are troublesome, none of them are so much so as species of some allied families.

MUSCITES, n. plu. *mŭs'sītz* [L. *muscus,* moss]: a general term for fossil plants of the moss family. MUSCOSITY, n. *mŭs-kŏs'ĭ-tĭ,* mossiness.

MUSCLE, n. *mŭs'l* [F. *muscle;* Norm. F. *moucle;* prov. F. *mouscle*—From L. *mus'cŭlus,* a little mouse, a muscle of the body, a shell-fish: Gr. *mus,* used in the same sense: Ger. *muschel,* muscle: It. *muscolo*]: one of the organs of motion in the body—the muscles form the red fleshy portions of land animals (see below): a shell-fish—but this now generally spelt MUSSEL, which see. MUSCLED, a. *mŭs'ld,* having large muscles. MUSCULAR, a. *mŭs'kū-lėr,* pertaining to muscle; full of muscles; performed by or dependent on muscles; strong; brawny; vigorous. MUS'CULARLY, ad. *-lĭ.* MUS'CULAR'ITY, n. *-lăr'ĭ-tĭ,* the state of being muscular. MUSCULAR CHRISTIANITY, that view of religion and its practical application which fits the individual to encounter unflinchingly the great battles of life, as distinguished from mere profession and sentimentalism: sometimes *familiarly,* the endeavor to force on others one's own beliefs against the true spirit of Christianity: also *familiarly,* due and proper development of bodily strength considered as an aid to mental and moral activity.

MUSCULAR TISSUE.

MUS'CLE—MUSCULAR TISSUE: one of the instruments by which all sensible movements of the animal body are performed:—substance of which these instruments are formed, distinguished specially by its contractile power. When examined under high magnifying power, the fibres of muscular tissue are found under two forms, distinguished from each other by the presence or absence of very close and minute transverse bars or stripes. The fibres of the *voluntary* muscles—muscles whose movements can be influenced by the will—as well as the fibres of the heart, are *striped;* while those of the *involuntary* muscles—the muscular structures over which the will has no control—e.g., the muscular fibres of the intestinal canal, the uterus, and the bladder, are *unstriped.*

Examining an ordinary voluntary muscle with the naked eye (e.g., a muscle from one of the extremities of any animal), we observe that it presents a fibrous appearance, and that the fibres are arranged with great regularity in the direction in which the muscle is to act or contract (for it is by their inherent power of contracting that muscles act). Closer examination shows these fibres arranged in *fasciculi,* or bundles of various sizes, inclosed in sheaths of areolar tissue, by which they are at the same time connected with and isolated from those adjoining them; and when the smallest *fasciculus* visible to the naked eye is examined with the microscope, it is seen to consist of a number of cylindrical fibres lying in a parallel direction and closely bound together. These *primitive* (or, as some writers term them, the *ultimate*) fibres present two sets of markings or *striæ*—viz., a longi-

Fig. 1.—A Fasciculus of Striped Muscular Fibres, showing longitudinal cleavage: Magnified 300 diameters.

tudinal and a transverse set. The fibres, when separated from each other, frequently split longitudinally into *fibrillæ,* as is seen at one of the ends of fig. 1. Sometimes, however, when a fibre is extended, it separates in the direction of the transverse striæ into a series of disks, as in fig. 2. Either cleavage is equally natural, but the latter is the least common. Hence, observes Bowman, who has specially investigated the minute structure of voluntary muscles, 'it is as proper to say that the fibre is a pile of disks as that it is a bundle of fibrillæ; but, in fact, it is neither the one nor the other, but a mass

in whose structure there is an intimation of the existence of both, and a tendency to cleave in the two directions. If there were a general disintegration along all the lines

Fig. 2.—A Fasciculus, similarly magnified, showing transverse cleavage:
The longitudinal lines are scarcely visible:
a and *b*, disks nearly detached; *b'*, a detached disk, more highly magnified, showing the sarcous elements.

in both directions, there would result a series of particles, which may be termed *primitive particles* or *sarcous elements*, the union of which constitutes the mass of the

Fig. 2 (*bis*).—Attachment of Tendon to Muscular Fibre in the Skate.

fibre. The fibres are supplied with vessels and nerves which lie in the intervals between them, and are attached by their extremities through the medium of tendon or aponeurosis to the parts which they are intended to move. Aggregated in parallel series, of greater or lesser size, and associated with nerves, vessels, tendinous structures, etc., they form the various MUSCLES, which are mostly solid and elongated, but sometimes expanded (as in the diaphragm) into a membranous shape. The length of the fibres is usually about that of the muscle in which they occur, and may vary from 2 ft. or more (in the sartorius muscle) to less than two lines (in the stapedius muscle in the middle ear); while their width varies from $\frac{1}{60}$ to $\frac{1}{1500}$ of an inch; being largest in crustaceans, fishes, and reptiles, where their irritability, or property of contracting under the action of a stimulus, is most enduring; and smallest in birds where it is most evanescent. Their average width in man is about $\frac{1}{400}$ of an inch. The average distance between the striæ, or the size of the sarcous elements, in the human subject is $\frac{1}{9400}$ of an inch, the extremes being $\frac{1}{15000}$ and $\frac{1}{6000}$ of an inch, according to the contraction or relaxation of the fibre. The form of the fibres is polygonal, their sides being flattened against those of the adjoining fibres. Each fibre is inclosed in a transparent, very delicate, but tough and elastic tubular sheath, which cannot always

be readily seen, but is distinctly shown stretching between the separated fragments of a fibre which has been broken within it, for its toughness will often resist a force before which its brittle contents give way. This tubular sheath is known as the *sarcolemma* or *myolemma*—the former term being derived from Gr. *sarx*, flesh, and *lemma*, skin or husk; and the latter, from Gr. *mus*, muscle, and *lemma*.

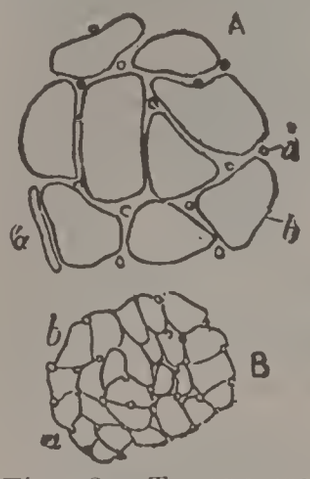


Fig. 3.—Transverse Sections of Striped Muscle that had been injected and dried: Magnified 70 diameters. A, from the frog; B, from the dog; *a, a*, sections of the injected capillaries, showing the position they occupy among the fibres; *a'*, a capillary seen longitudinally; *b, b*, section of elementary fibres, showing their angular form and various size. These figures show that the vascularity is greatest when the elementary fibres are smallest.

Muscles grow by an increase, not of the number, but of the bulk of their elementary fibres. *Involuntary* or *unstriped* muscular tissue occurs commonly in the shape of flattened bands of considerable length, but of a width not exceeding $\frac{1}{2000}$ or $\frac{1}{3000}$ of an inch. These bands are translucent, and sometimes slightly granular, and are usually marked at intervals by elongated nuclei, which become much more apparent on the addition of acetic acid. Kölliker has shown that every one of these bands or fibres is either a single elongated cell (a fibre-cell) or is a fasciculus of such cells. These fibres have not usually fixed points of attachment like the striated fibres, but form continuous investments around cavities within the body—such as the intestinal canal, the bladder, the uterus, the blood-vessels, etc.—or are dispersed through the substance of tissues, such as the skin, to which they impart a contractile property.

For the chemical composition of ordinary (or voluntary) muscle, see FLESH. It is to be added that the fibrillæ, or the sarcous elements of which they are composed, consist of a substance termed myosin, which closely resembles the fibrine or coagulating constituent of the blood; and that the same myosin is also the main constituent of the unstriped muscles, or at all events of their fibre-cells. Like the blood-fibrin, it exists in a fluid form in the living tissue as myosinogen and paramyosinogen, and coagulates or solidifies only after death. These two substances are soluble proteids, and there is still another soluble proteid in muscular tissue, viz., myoglobulin; and one insoluble proteid—myostromin.

Muscles vary extremely in form. In the limbs they are usually of considerable length, surrounding the bones and forming an important protection to the joints; while in the trunk, they are flattened and broad, and contrib-

ute essentially to form the walls of the cavities which they inclose. There is unfortunately no definite rule regarding the nomenclature of muscles. Muscles derive their names (1) from their situation—e.g., the temporal, pectorals, gluteals, etc.; (2) from their direction—e.g., the rectus, obliquus, etc., of which there may be several pairs—e.g., rectus femoris, rectus abdominalis, rectus capitis, etc.; (3) from their uses—e.g., the masseter, the

Fig. 4.—Muscular Fibre broken across:
Showing the untorn sarcolemma uniting the fragments.

various flexors, extensors; (4) from their shape—e.g., the deltoid, trapezius, rhomboid, etc.; (5) from the number of their divisions—e.g., the biceps and triceps; or (6) from their points of attachment—e.g., the sterno-

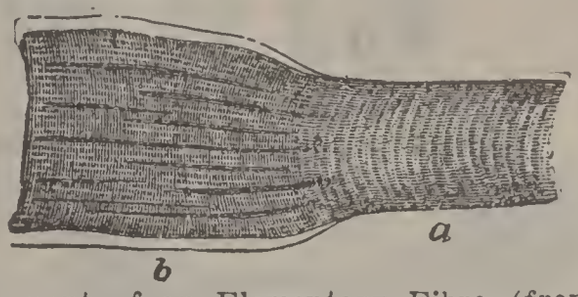


Fig. 5.—Fragment of an Elementary Fibre (from the Eel) partially contracted in water:
Magnified 300 diameters.

a, uncontracted part; *b*, contracted part, along the border of which the sarcolemma is raised from the surface by the water that has been absorbed, that has thereby caused the contraction, and by it has been expelled from the contractile mass.

cleido-mastoid, the genio-hyo-glossus, the sterno-thyroid, etc. In the description of a muscle, its points of attachment are denoted by the words *origin* and *insertion;* the former applied to the more fixed point or that toward which the motion is directed, the latter to the more movable point. The application of these terms is, however, in many cases arbitrary, as many muscles pull equally toward both attachments. Muscles opposed in action are termed *antagonists*, this antagonism being in most cases required by the necessity that exists for an active moving power in opposite directions. Thus, by one set of muscles, the *flexors*, the limbs are bent; while by a contrary set, the *extensors*, they are straightened. One set, termed the muscles of mastication, closes the jaws, while another set opens them; and probably every muscle in the body has its antagonists in one or more other muscles.

The skeleton, which may be termed the locomotive

framework, may be regarded as a series of levers, of which the fulcrum is, for the most part, in a joint—viz., at one extremity of a bone—the resistance (or weight) at the further end, and the force (or muscle) in the intermediate portion. In most cases, in order to preserve the

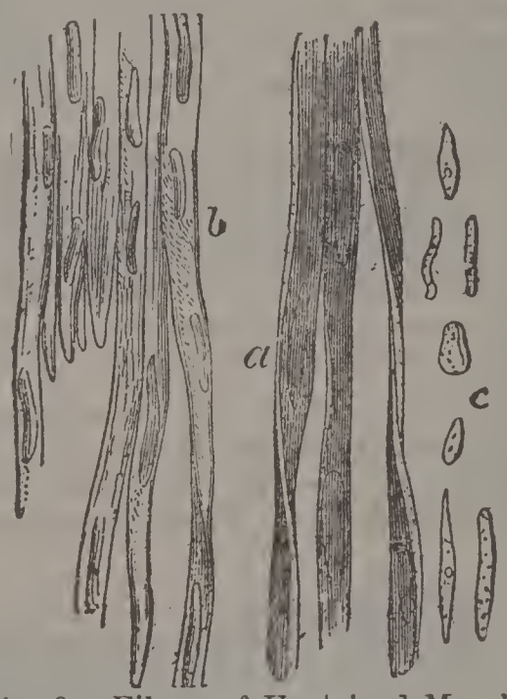


Fig. 6.—Fibres of Unstriped Muscle:

a, in their natural state; *b*, when treated with acetic acid, which reveals the existence of corpuscles; *c*, corpuscles or nuclei detached. This and the preceding diagrams are copied from Bowman.

necessary form of the body, muscles are applied at a great mechanical disadvantage as regards the exercise of their power; that is to say, a much larger force is employed than would suffice, if differently applied, to overcome the resistance. The two main sources of this disadvantage lie in the obliquity of the insertion, and consequently of the action of most muscles, and in the muscles being usually inserted very near the fulcrum. The first of these disadvantages is in many cases diminished by the enlargements of the bones at the joints. (See fig. 7, A.) The tendons (*i*) of the muscles (*m*) situated above the joint are usually inserted immediately below the bony enlargement, and thus reach the bone that is to be moved (*o*) in a direction somewhat approaching the perpendicular. If this enlargement did not exist (as in fig. 7, B), the contraction of the muscle instead of causing the lower bone to turn upon the upper one with comparatively little loss of power, would do little more than cause the two ends of the bones to press on each other. The second mechanical disadvantage is compensated for by gain in the extent and velocity of movement, and by avoidance of

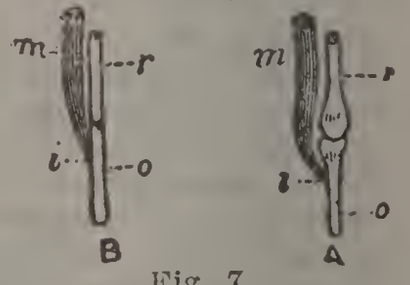


Fig. 7.

the great inconvenience of having the muscles extended in straight lines between the ends of jointed continuous levers. Thus (in fig. 8) the bones of the forearm (*b*,*c*) are bent upon the bone of the arm (*a*) by the biceps muscle (*d*), which arises close to the head of the latter, and is inserted at *c*, at a short distance from the elbow-joint, which acts as the fulcrum of the lever *c*. By this arrangement, a contraction of a single inch in the muscle moves the hand (*f*), in the same time, through the extent of about 12 in., but then the hand moves through every inch with only about one-twelfth part of the power exerted by the muscle. By the junction of two or more levers in one direction, as in the different segments of the extremities, the extent and velocity of their united actions are communicated to the extreme one. Thus a blow with the fist may be made to include the force of all the muscles engaged in extending the shoulder, elbow, and wrist.

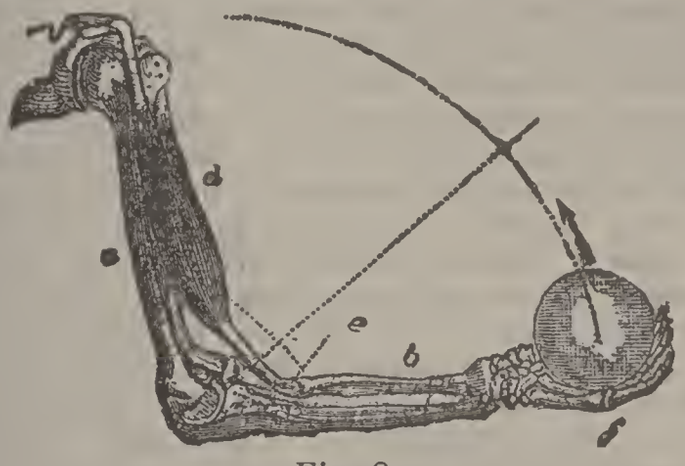


Fig. 8.

The great and characteristic property of muscular tissue—that of shortening itself in a particular direction when stimulated—is called *contractility*. The stimulus may be direct irritation by mechanical means, or by galvanism, or by some chemical substance, but in the living body the muscular fibres are, in most cases, made to contract by the immediate influence of the nerves distributed among them, which are consequently termed *motor* nerves (see NERVOUS SYSTEM), and are under the influence of the will. By an exertion of volition, we can contract more or fewer muscles at once, and to any degree, within certain limits; and, as a matter of fact, there is hardly any ordinary movement performed in which several muscles are not called into play. But every voluntary muscle is subject also to other influences more powerful in their operation than the will. The movements of the features under the impulses of passion and emotion are more or less voluntary, as is shown by the very partial power that the will has of restraining them, and the extreme difficulty of imitating them.

Many movements ensue involuntarily when certain im-

pressions, which need not necessarily be attended with consciousness, are made on the surface of the body, or on any part of its interior, either by external or internal causes. Such movements are termed *reflex*. See NERVOUS SYSTEM. For some of the important groups of muscles in the human body, see ARM; EYE; FOOT; HAND; LEG; etc.

MUSCLE READING: the discovery through slight, involuntary muscular movements of the direction of another's attention or the object of his thought. It is known that many people cannot think intently of definite objects without making slight involuntary movements. These movements are most easily detected in the hand. By holding the agent's hand, these slight changes in muscular tension may be detected as the hand is moved toward or away from the object of thought. This is the basis for finding objects in the willing game. A skilled muscle reader working with an individual in whom the involuntary movements are marked, may thus perform quite remarkable feats in finding hidden objects or selecting lettered or numbered blocks thought of by the transmitter. With some people these involuntary movements may manifest themselves in writing on a planchette, an easily moving board on which the hand rests and which carries a pencil. This automatic writing may even convey in words the writer's thoughts. Sometimes the recipient is not fully aware of how he makes his discoveries. (See MIND READING). These involuntary movements have also been suggested as the explanation of table lifting, spirit rappings, and automatic writing in the spiritualistic seance, when there is no indication of intentional trickery. (See TELEPATHY.)

MUSCLE SENSATIONS: those conscious experiences which result from the excitation of the sensory nerve fibres which terminate in the muscles. These may be aroused through contraction of the muscles or through the internal conditions of the muscles as in fatigue. In fatigue the sensations are often classified as organic sensations. Those sensations which originate as a result of muscular contraction are intimately related to other sensations of movement. See KINÆSTHETIC SENSATIONS.

MUSCLE SHOALS: shallow expansion of the Tennessee river in northern Alabama, where for about 25 m. the river descends 100 ft. through a succession of rapids, about 250 m. from its mouth. The name is from the great number of fresh-water mussels (or muscles) found there.

MUSCOGEE, *mŭs-kō'gē:* Oklahoma (formerly Indian Territory), town in the Creek Nation territory; on the Missouri, Kansas & Texas railroad; about 120 m. e. by n. of Oklahoma. It is in the midst of a fertile agricultural region where some attention is given to cultivating wheat

and considerable attention to raising cattle. Its chief trade is in wheat and live-stock. It is the seat of the Henry Kendall College, founded in 1894 under the auspices of the Presbyterians. There are in attendance over 200 pupils. The courses lead to the degrees of A.B., B.S., and B.L. Muscogee is the headquarters of the government Indian agent. Pop. (1910) 4,406.

MUSCO'GEE (or MUSKO'GEE) INDIANS. See CREEKS.

MUSCOID, n. *mŭs'koyd* [L. *muscus,* moss; Gr. *eidos,* likeness]: moss-like: N. a moss-like plant.

MUSCOLOGY, n. *mŭs-kŏl'ŏ-jĭ* [L. *muscus,* moss; Gr. *logos,* discourse]: that part of botany which treats of the mosses.

MUSCOVADO, n. *mŭs-kō-vā'dō* [Sp. *mascabado,* a term applied to inferior sugar]: raw or unrefined sugar.

MUSCOVITE, or COMMON MICA: a native silicate of aluminum, potassium and hydrogen, occurring in crystals that belong to the monoclinic system, though usually hexagonal or rhombic in general form, and distinguished by the facility with which it may be split into thin laminæ. Muscovite also occurs in massive forms, and in scaly aggregates. It occurs in various colors, and has a lustre that is vitreous or pearly. It is transparent or translucent, with a hardness of from 2 to 2.5, and a specific gravity of from 2.8 to 3. It is a very common mineral, and is an essential constituent of granite, gneiss, and numerous other rocks. The transparent varieties, when obtainable in considerable size, are used for the manufacture of gas-burner chimneys, for covering the windows of stoves and the 'peep-holes' of furnaces, and for other purposes where transparency must be combined with infusibility and with a considerable power of resisting the prolonged action of heat. Considerable quantities of it are mined in Bengal and in Switzerland, and fine deposits occur in many parts of the United States. Perfectly transparent plates a yard in diameter are sometimes found at Grafton, N. H., and similar specimens also occur in the western part of North Carolina. Pulverized muscovite is employed in the preparation of certain kinds of paint, and in the manufacture of insulating material for use about electric machinery. Muscovite is not affected by acids, but decomposes upon being fused with the alkaline carbonates. The name 'muscovite' is derived from the older popular name 'muscovy-glass,' which is supposed to refer to the fact that the Russians used it for window-panes. See MICA.

MUSCOVY, a. *mŭs'kŏ-vĭ:* of or from *Moscow,* in Russia (q.v.). MUSCOVITE, n. *mŭs'kŏ-vīt,* native or inhabitant of that small part of Russia which formerly alone constituted Russia. MUSCOVY-DUCK, a large species of duck (see MUSK DUCK).

MUS'CULUS, WOLFGANG: German scholar and Protes-

tant theologian: b. Dieuze, Lorraine, 1497; d. Bern 1563, Aug. 30. He entered the Benedictine abbey of Lutzelstein and was ordained priest. He was converted to the Protestant faith by Luther's writings, withdrew from his order in 1527, and in 1531 became pastor of a church at Augsburg. In 1536 he assisted at the Wittenberg assembly, and in 1540 was appointed by the Augsburg senatus a delegate to the ecclesiastical conferences at Worms and Ratisbon. He subsequently became professor of theology at Bern. Among his works are *Commentarii in Genesin* (1557); and an edition of Polybius.

MUSE, n. *mūz* [F. *muse*—from L. *Musa;* Gr. *Mousa,* one of the nine goddesses of learning, poetry, and song in classic mythology (see MUSES, THE): It. *musa*]: the inspiration or power of song. MUSE'LESS, a. *-lĕs,* having no power of poetry; unpoetical. MUSES, n. plu. *mū'zĕz,* in *anc. myth.,* nine sister goddesses who presided over the liberal arts, the daughters of Zeus (Jupiter) and Mnemosyne (memory)—viz., CALLIOPE, *kăl-lī'ŏ-pē,* eloquence and heroic poetry; CLIO, *klī'ō,* history; ERATO, *ĕr'ă-tō,* lyric and love poetry; EUTERPE, *ū-tėr'pē,* music; MELPOMENE, *měl-pŏm'ĕ-nē,* tragedy; POLYHYMNIA, *pŏl'ĭ-hĭm'nĭ-ă,* singing and rhetoric; TERPSICHORE, *tėrp-sĭk'-ō-rē,* dancing; THALIA, *thă-lī'ă,* pastoral and comic poetry; URANIA, *ū-rān'ĭ-ă,* astronomy.

MUSE, v. *mūz* [F. *muser,* to muse, to dream; OF. *muse,* the mouth, the snout of an animal: It. *musare,* to muse, to surmise, to muzzle—from *muso,* a muzzle, a snout: Norw. *mussa,* to whisper, to mutter: L. *mussārĕ,* to buzz, to brood over: Gr. *muzein,* to murmur: Bret. *mouza,* to sulk: Swiss, *musen,* to mope: Dut. *muizen,* to ponder, to muse]: to ponder; to think closely; to study in silence; to think on; to be absent of mind; in *OE.,* to wonder; to be amazed. MU'SING, imp.: ADJ. meditative: N. act of one who muses; meditation; contemplation; *familiarly,* a brown-study. MUSED, pp. *mūzd.* MU'SER, n. *-zėr,* one who is apt to be absent in mind. MUSE'FUL, a. *-fûl,* silently thoughtful. MUSE'FULLY, ad. *-lĭ.* MU'SINGLY, ad. *-lĭ.*—SYN. of 'muse': to meditate; ruminate; consider; reflect; study; think.

MUSES, *mūz'ĕz,* THE: in classic mythology, divinities originally included among the Nymphs, but afterward regarded as quite distinct from them. To the Muses was ascribed the power of inspiring song, and poets and musicians were therefore regarded as their pupils and favorites. They were honored first among the Thracians; and as Pieria around Olympus was the original seat of that people, it came to be considered as the native country of the Muses, who were therefore called *Pierides.* In the earliest period their number was three, though Homer sometimes speaks of a single muse, and once, at least, alludes to nine. Nine is the number given by Hesiod in his *Theogony,* who also mentions their names—Clio

THE MUSES—VATICAN MUSEUM, ROME.

(q.v.), Euterpe (q.v.), Thalia (q.v.), Melpomene (q.v.), Terpsichore (q.v.), Erato (q.v.), Polyhymnia (q.v.), Urania (q.v.), and Calliope (q.v.). Their origin is differently given, but the most widely spread account represented them as daughters of Zeus and Mnemosyne. Homer speaks of them as the goddesses of song, dwelling on the summit of Olympus. They are also often represented as companions of Apollo, and as singing while he played upon the lyre at the banquets of the Immortals. Various legends ascribed to them victories in musical competitions, particularly over the Sirens (q.v.). In the later classic times, particular provinces were assigned to them in connection with different departments of literature, science, and the fine arts; but the invocations addressed to them appear to have been, as in the case of modern writers, merely formal imitations of the early poets. Their worship among the Romans was a mere imitation of the Greeks, and never became truly national or popular. Among the places sacred to them were the wells of Aganippe and Hoppocrene on Mount Helicon, and the Castalian spring on Mount Parnassus.

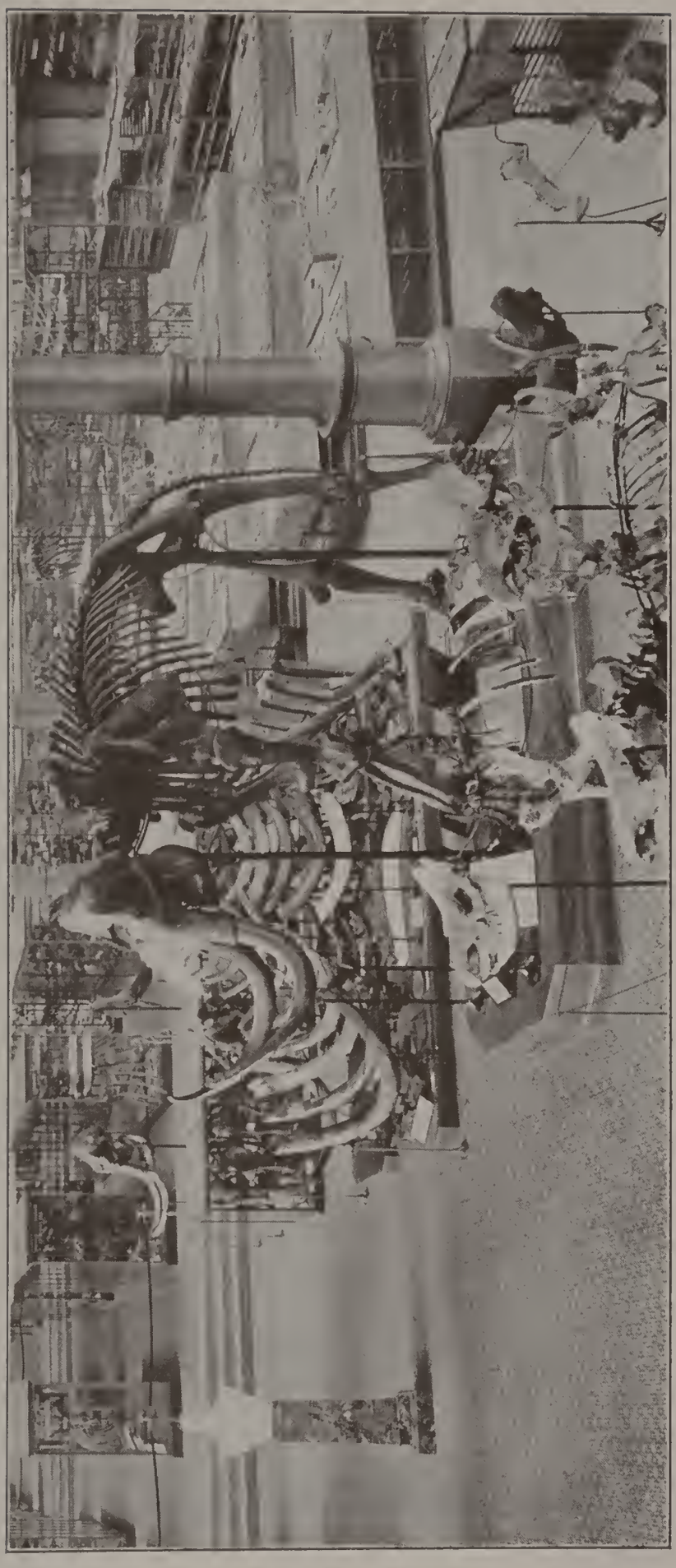
MUSETTE, n. *mū-zĕt'* [F. dim. of OF. *muse*, a pipe]: in *mus.*, a small bagpipe formerly much used by the various people of Europe; the name of a melody, of a soft and sweet character, written in imitation of the bagpipe tunes; dance tunes and dances in the measure of those melodies: a reed stop on the organ.

MUSEUM, n. *mū-zē'ŭm* [L. *musēŭm;* Gr. *mouseion*, a place dedicated to study and to the Muses—from Gr. *mousa*, a muse: It. *museo:* F. *musée*]: building set apart for systematic arrangement of curiosities in nature and art, or of instructive specimens in any department of study. The name was given originally by the ancients to a temple of the Muses; afterward to a building devoted to science, learning, and the fine arts. The first museum of this kind was the celebrated Alexandrian Museum (see ACADEMY). After the revival of learning in Europe, the term was sometimes applied to the apartment in which any kind of philosophical apparatus was kept and used; but it has long been almost exclusively appropriated to collections of the monuments of antiquity, and of other things interesting to the scholar and man of science, or the student of the fine arts. In this sense it was used first in Italy, and probably in the case of the famous Florentine Museum, founded by Cosmo de' Medici, which soon became a great and most valuable collection of antiquities. Nothing analogous to the museums of modern times existed among the ancients, the greatest collections of statues and paintings which were made in the houses of wealthy Romans having been intended for show and splendor. The name soon ceased to be limited to collections of antiquities, and sculptures, and paintings: collections illustrative of natural history and other sciences

now form a chief part of the treasures of many of the greatest museums, and there are museums devoted to particular branches of science.

MUSEUMS: collections of objects of art, of natural science, and of historical interest, properly housed, arranged and classified for purposes of study and exhibition. The function of the museum is primarily educational and in the proper fulfillment of this function it should appeal to two different classes of people: it should furnish material for the researches of the specialist and student, as well as collections so arranged and displayed as to attract, interest, and instruct the general public. This double function necessarily complicates the question of museum administration, as the tendency is inevitable to over-emphasize one side or the other of the work; the larger and more important museums are seeking to solve this problem by reserving certain special collections for the use of students, while keeping the larger collections of most general interest on exhibition for the public.

Great Britain.—While in the United States the public library has reached its most complete development (see LIBRARIES), the growth of the public museum has lagged behind that of England and the Continent. England has not only some of the largest and most important museums of the world, but also a number of smaller museums in the cities of moderate size; recent statistics have shown that one-sixth of English museums are in towns of less than 10,000 population, and one-third in towns of less than 30,000 population. England's most famous museum is, of course, the British Museum (q.v.) of London. This museum was established in 1753, through a bequest of Sir Hans Sloane giving his library and collections of antiquities and art to the government on the payment of £20,000 to his family; the funds were raised by a lottery authorized by parliament and after the payment was made to the Sloane family, the Hamilton collection of Roman antiquities and two MSS. collections were purchased. The first home of the British Museum was in Montagu House, but in 1823 the plans were made for the erection of the present building, and the eastern side completed in 1828. The chief departments of the Museum are Printed Books and Manuscripts (together forming the Library), Greek and Roman Antiquities, Egyptian and Assyrian Antiquities, British and Mediæval Antiquities and Ethnography, and Coins and Medals. Among the most important and famous collections may be mentioned the Elgin marbles, from the frieze of the Parthenon, collected by Lord Elgin; the Phigalian marbles, discovered near the ancient city of Phigalia; the Portland Vase, the most noted specimen of carved work in glass in the world; the Rosetta Stone; the Assyrian sculptures and Egyptian mummies; the skeleton of the man of the Neolithic age; and an Australian ethnographical collection added in 1903. The collections of the department of



THE IGUANODONS IN THE GREAT HALL OF THE ROYAL MUSEUM OF NATURAL HISTORY, BRUSSELS.

Natural History, once a part of the British Museum, have been removed to the South Kensington Museum, which also contains an unusually fine collection illustrating the progress of manufacturing and engineering, models of steam engines, electrical devices, etc. The art side is represented at the National Art Museum, which naturally has a particularly excellent collection of the work of English artists.

France.—One of the most famous art museums of the world is that of the Louvre at Paris. The Louvre was established in 1793 as the national museum of France; at that time the collection consisted of about 500 paintings, to which two years later the pictures and statues from Versailles were added. The building has since been added to at different times, the Gallery of Apollo being completed in 1851 and what is known as the new Louvre in 1857. The collections of the Louvre include some of the finest specimens of the work of Raphael, Titian, Correggio, Rubens, Van Dyck, Rembrandt, and Murillo, in addition to an excellently representative collection of the French painters. There is also a fine collection of drawings, including the work of the Italian, the Flemish, the German, and the French schools. Among the many fine specimens of Greek and Roman sculpture, the Venus de Milo and the magnificent Victory of Samothrace deserve special mention. The Louvre also contains an interesting and valuable collection of French furniture of the time of Louis XIV. to Louis XVI., of tapestries, and of carved ivories.

The Cluny Museum, Paris, is devoted to a single period; the Guimet Museum is devoted to showing the development of religious ceremonial; the Trocadero to ethnology, and the Museum of Artillery shows the development of weapons. The Luxembourg is devoted to sculpture and painting.

Italy.—An Italian art museum of importance is that of the Vatican in Rome; this contains some of the masterpieces of Michael Angelo and Raphael, including the former's *Last Judgment,* a fresco in the Sistine Chapel, and the latter's *Transfiguration.*

The Vatican contains also a great number of ancient statues, mostly found on the site of the city of Rome; pre-eminent among these are The Lacocoön, and the Apollo Belvedere.

The Uffizi, Pitti, the Museum of the Lateran and the Museo Nazionile at Naples also contain valuable collections. The Florentine museums contain antique bronzes, Egyptian art and many valuable tapestries.

Germany.—There are many fine museums in Germany, the chief ones being the Royal Museums of Berlin, Dresden, Munich, and the Germanic Museum at Nuremberg.

The Dresden Art Gallery contains 2,500 canvases, and numbers among its choicest possessions Correggio's *Holy Night,* and Raphael's *Sistine Madonna.* Munich has three

art museums, the Glyptothek, containing the statuary, the Old Pinakothek, containing the mediæval and Renaissance paintings, and the New Pinakothek, containing the works of modern painters.

Austria.—The Imperial Museums of Vienna contain national collections and the city boasts of 15 museums.

Spain.—The Prado and the Archæological Museums in Madrid and the museum at Seville are the most important.

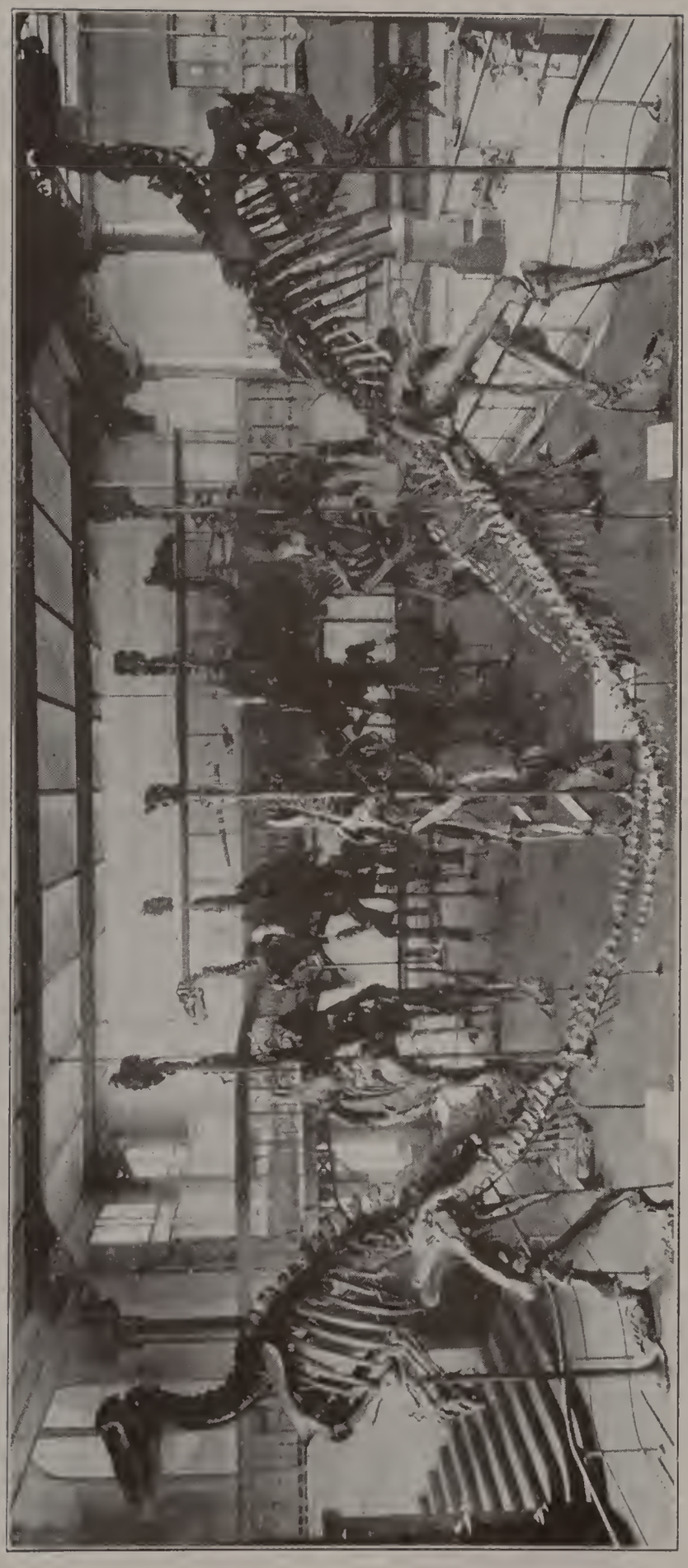
Russia.—The Hermitage Palace at St. Petersburg contains many mediæval objects of great value; the museum at Moscow is rich in stone and metal relics. National museums exist in many Russian cities.

Japan.—The National Museum Tokyo is large and there are also important collections at Kioto and Nara.

Holland, Switzerland, Portugal, Egypt, Greece, India have many splendid museums devoted to the various arts and sciences.

Belgium.—Of scientific museums, the Museum of Natural History of Brussels is one of the most important of its kind in Europe. Its collections are unusually complete, and the arrangement excellent. The fundamental division of the museum building is according to the geological chronology which may be regarded as definitely established. The vertebrates and invertebrates occupy two separate halls; the vertebrate hall, which was last to be opened to the public, contains an excellent collection of the skeletons of pre-historic animals, among which the most notable is the group of the iguanodons; the bones of these prehistoric reptiles were found in the Bernissart coal pits, and were carefully removed and preserved; in all 29 iguanodons were found, the majority complete. These valuable fossils were presented by the management of the coal mines to the museum, and today are fully prepared for exhibition and study; they have excited the admiration of all naturalists, and will undoubtedly render a great service to science.

United States.—The United States contains a few museums that very nearly equal the best of the foreign collections; and there is now a growing tendency to emphasize the importance of museums and to give increased attention to their development and improvement. In 1906 the American Association of Museums was organized by a few museum curators and others interested in the work. The purposes of this association as given in their constitution is 'to promote the welfare of museums, to increase and diffuse knowledge of all matters relating to them, and to encourage helpful relations among museums and those interested in them.' The members are of four classes: active members, those engaged in the work of museums on the payment of the annual dues of $2; associate members, persons not actively engaged in museum work, contributing $5 per year; sustaining members, museums paying not less than $10 per year; honorary mem-



THE IGUANODONS IN THE GREAT HALL OF THE ROYAL MUSEUM OF NATURAL HISTORY, BRUSSELS.

bers, persons distinguished for eminent service upon election to the association.

In Boston the two scientific museums of importance are connected with Harvard University; the Harvard Museum is really one in plan and organization, but is divided into two main sections, the Agassiz Museum and the Peabody Museum. The former was organized by Louis Agassiz, the first department, which was established by him, being that of Comparative Zoology. The museum now includes in addition to the zoological collection, botanical, mineralogical, and geological collections, including some excellent fossils and skeletons of prehistoric animals. The most notable single collection in this museum is that of the glass flowers, manufactured in Germany; the secret of the manufacture is known only to a single family, and all flowers made by them are sent to the Agassiz Museum so that the collection is a unique one. So perfect are these artificial flowers in every detail that they can be used in botanical study. The beginnings of the Peabody Museum were made in 1866 through the generosity of George Peabody. It is devoted to archæology and ethnology. Extensive explorations in the United States and in Central America have been carried on for the enrichment of this museum with the result that it has an important and authentic collection illustrating nearly every phase of American archæology. While primarily devoted to American archæology and ethnology, Old World material has always been given place for the purposes of comparative study; among the more important European collections are those of the Swiss Lakes collected by Agassiz, and the Belgian collection presented by the Belgian government. The most notable collection in the Museum is that illustrating the costumes, arts, superstitions, and customs of the North American Indians and Eskimos; many of the specimens were collected in the 17th and 18th centuries and are not now to be duplicated, hence they are of priceless value. The arrangement of the collections is geographic. The museum of the Boston Society of Natural History contains a fine collection of birds.

Art in Boston is represented by the Boston Museum of Fine Arts. It was incorporated in 1870; it is supported wholly by private gifts, and is under the management of a board of trustees, including representatives of the city and the state. The museum contains collections of Egyptian art, classical art, paintings, Chinese and Japanese art, prints and drawings, and rugs, tapestries and laces. The collection is small compared with the great art galleries of the continent, but the exhibits are well selected and of considerable value. The classical art collection, though small, contains an unusual proportion of original Greek marbles; the paintings include several old masters, notably Velasquez, Rembrandt, and a portrait by Philippe de Champaigne, examples of whose

work are rare in America; the works of Corot and Millet are also represented, and Copley's and Stuart's portraits; the Boston Museum also has the original of Henri Regnault's *Horses of Achilles.* The Boston collection of Japanese and Chinese paintings is considered by specialists one of the finest in the world.

New York City leads the cities of the United States in the size and value of its art collection. The Metropolitan Museum of Art is controlled by a private corporation organized in 1869. The site and building are given by the city. The original building in Central Park is of brick, the new building, of which the central east front is now completed, is of gray stone, and will, when completed, enclose the old building in a central court. One of the most notable departments of the Metropolitan is that of the paintings, the finest collection of its kind in the country. The arrangement of this collection is unfortunately not altogether by school and period, as some important collections are kept together by the terms of the gift. The American, English, Dutch, Flemish, French, German, Spanish, and Austrian schools are well represented and the Italian, Florentine, and Swedish schools have also representatives in this collection. There are three Rubens, including the *Return of the Holy Family from Egypt,* four Rembrandts, and three portraits by Velasquez. Of the more modern paintings one of the best known is Rosa Bonheur's *Horse Fair;* others of the French school include Cot's *The Storm,* Lepage's *Joan of Arc,* and L'Hermitte's *Among the Lowly.* The Barbizon school is also represented by Millet, including *The Water Carrier* and *The Sower,* and by Corot and Rousseau. There are some excellent works from the German and Austrian schools, of which Gabrile Max's *The Last Token* (Austrian) is one of the public's favorites. Of the English school there are a number of Sir Joshua Reynolds's portraits, several Turners, including the *Whale Ship,* and Haydon's *Napoleon at St. Helena.* American artists naturally have a good representation; Leutze's *Washington Crossing the Delaware* is one of the largest and most notable paintings of this school; among the smaller pictures the *Last Moments of John Brown* by Hovenden invariably attracts attention. In addition to the regular collections there are always temporary exhibitions at the Metropolitan of great interest and value. In addition to the paintings, the Metropolitan has an admirable collection of statuary, including casts and originals of classical and mediæval sculpture and an excellent modern collection. Of the latter the *Veiled Woman* is an exquisite piece of work; other noticeable works in this collection are Borglum's *Mares of Diomedes,* and several of Rosetti's works. The Metropolitan contains one of the most valuable collections of ancient art in the Cyprian collections of General Cesnola; these include statues, sarcophagi, the Cypriote inscriptions, and lesser objects of art. Other

VATICAN MUSEUM, ROME.

valuable antiques are the Etruscan war chariot found on the site of the ancient Nursia, and the frescoes from the villa at Boscoreale. There is a valuable collection of antique coins and ornaments, Assyrian, Egyptian, Phœnician, Greek, and Roman, including the collection of gold Greek ornaments presented by J. P. Morgan. There is an excellent pottery collection, showing ancient, European, and Oriental specimens, and of glass ware, ancient and mediæval. Tapestries, laces, and armor are also represented at the Metropolitan, and there is a most interesting collection of musical instruments showing their historical development. New York has also an excellent scientific museum in the American Museum of Natural History. The museum was incorporated in 1869, and for a time occupied the Arsenal Building in Central Park; very shortly the construction of its present building at Seventy-seventh street was begun, and this will be gradually extended to occupy the four blocks reserved for it. The museum is supported and managed by a private corporation, but the ground and building are furnished by the city. The natural sciences are well represented in the museum; it has mineralogical, geological, fossil, botanical, zoological, and archæological and ethnological collections, which, though covering the world in their scope, are particularly complete for the western hemisphere. Of the mineralogical collections one of the most interesting is the Morgan collection of precious stones, including a large number of valuable gems, diamonds, sapphires, amethysts, and others less well known. Among the fossil collections there are a number of interesting groups representing the development of some of the prehistoric animals of the American continent; most notable of these is the rhinoceros group and the horse group. The museum exhibits of European and North American birds and mammals are especially notable, not only for their completeness but for the excellent arrangement; the bird collection is particularly famous. Wherever possible the birds are shown in groups arranged in settings reproduced from their natural haunts and in their natural attitudes on the nests, feeding, in flight, etc. It forms an unusually artistic as well as instructive collection. Some of the mammals, notably the bisons and the elks, are also arranged in lifelike groups. Among the archæological and the ethnological exhibits the Mexican antiquities, and the specimens from the North Pacific Indians, and the Eskimos deserve special mention. The Mexican collections include not only original relics of value and importance but also casts of others, the whole illustrating fully the Mayan and Aztec civilizations. The other two collections are the best in the world for their particular subjects; not only are there important specimens relating to the life and customs of the tribes mentioned, but also life size figures grouped to illustrate the various occupations. Of the single specimens which

the museum contains the volcanic bomb thrown out of Mt. Pelee in 1902, and the meteoric stone brought from the North by Peary attract the most general attention. Provision is made for public school teachers to bring their classes to study certain points in natural science; teachers from neighboring cities often availing themselves of this privilege. The museum also conducts a series of lectures each year, and publishes a quarterly journal.

Philadelphia has a museum of a unique sort; somewhat similar museums are found in Europe, but none with so wide a scope, but there is no other in the United States. This is the Philadelphia Commercial Museum. This was founded in 1893 by Dr. W. P. Wilson, who was led to undertake the work by his desire to retain some of the exhibits of foreign countries at the World's Fair in Chicago; many exhibits were secured, especially those from Central and South America, Japan, Australia, India and Africa, and these formed the nucleus of the museum. The collections have been greatly increased since that time and are very nearly complete. They include the raw materials from different countries arranged in two ways, geographically, by countries, and monographically, by products; also the manufactured products of other countries, these are arranged largely by products. The aim of the museum is primarily to aid the American manufacturers in extending their trade. The museum, therefore, carries on other important lines of work besides its exhibits; it has a laboratory where different raw materials, foods, and other products are chemically tested at the request of manufacturers and others; and it also conducts a bureau of information through which it collects data and disseminates information intended to keep business men in touch with commercial conditions throughout the whole world. In the work of obtaining this information the museum has collected an excellent commercial library, one of the best in the world. The Academy of Natural Science, Philadelphia, contains large collections of birds, and one of the largest collections of mollusks in the world.

In Pittsburg the Carnegie Museum is a part of the institute founded by Andrew Carnegie, and occupies a portion of the institute buildings at the entrance of Schenley Park, which are not yet completed. The museum departments include those of zoology, botany, mineralogy, geology, paleontology, archæology, and ethnology, pottery, coins, textiles, and local history. Of the zoological collections the most notable are those of the Costa Rican birds, and the craw-fishes of the state of Pennsylvania, and the insects of Ohio Pyle, Penn., and the city of Pittsburg. In the department of botany special attention is given to the flora of Pennsylvania, and a herbarium of the state is being prepared. The museum has the finest collection of European paleontology in the

STATUE OF NIOBE, VATICAN MUSEUM. ROME.

United States, and also an excellent collection of fossils from Minnesota, Dakota, and Montana, where researches have been carried on in behalf of the museum; the same department also has the skeleton of the Diplodocus, a replica of which was presented to the British Museum by Mr. Carnegie. In the archæological department the more important collections are the pottery and stone implements from Costa Rica and the Pacific coast region, and the Spang collection of antiquities from classical lands.

The National Museum of the United States is located at Washington; this is a part of the Smithsonian Institute. The Smithsonian Institute was created by an act of congress in accepting the bequest of James Smithson, an Englishman. The work of the institute at first consisted of the publication of original memoirs, giving popular lectures, and otherwise stimulating scientific work in the United States. There was from the first a small collection of scientific interest, which was increased by the institute, and largely through the exploring expedition of Captain Wilkes. In 1879, provision was made for the building of the National Museum to be controlled by the regents of the institute, and this absorbed the collections of the institute and many more in the possession of the general government, notably those presented by foreign governments at the time of the Centennial Exposition of 1876. These collections have been continually increased by the government and the gifts of private individuals, until the National Museum has the foremost collection in the world relating to the natural history, ethnology, geology, and paleontology of what is now the United States, with valuable collections from other parts of the American continent and from abroad. In addition to the scientific collections there is an interesting department of American history, in which are relics of all the wars of the United States, presentation swords, etc. Among the relics of the Spanish war is a most complete collection of Filipino knives and bolos. There is also the technical exhibit illustrating the evolution of various industries, engines, etc. It includes an interesting set of specimens showing the development of the knife and fork. The department of paleontology has a number of interesting and valuable fossils, including the complete skeleton of a stegosaur, and of the triceratops; the department of comparative zoology includes skeletons of every sort; the most noted skeletons in this exhibit are those of the snakes, which are considered the finest pieces of work of the kind in any museum. The department of zoology contains the great eighty-foot sulphur-bottom whale, and a large group of buffaloes shot and mounted by W. T. Hornaday. The geological department contains an exhibit of the geological and mineral products of each state arranged by states; there is also a valuable collection of gems, and of meteorites. The department of ethnology contains one of the most inter-

esting exhibits of the museum; here is an excellent collection representing the life and customs, especially the art, of the North American Indians, both the extinct and the existing tribes; there are a number of groups representing the Indians engaged in characteristic occupations. An interesting and unique department of the Smithsonian Institute Museum is the children's room, in which a few carefully selected exhibits in natural history are attractively arranged and simply labeled in a way to interest and at the same time instruct. This exhibit consists largely of birds and animals, with some shells and insects, and one case of minerals and fossils. One case labeled *How Creatures Hide* illustrates the principle of protective coloring.

Chicago has a museum of science established by Marshall Field in 1894 at the close of the World's Fair in that city; a tax levy has been voted by the city for the maintenance of the museum after the erection of a new building. The nucleus of the collection was certain exhibits obtained at the World's Fair. The work of the museum is in four departments, anthropology, botany, geology, and zoology. The museum's specialties are its collections of American ethnology, world mineralogy, and economic botany. It has special study collections of mammals and birds, laboratories, assaying and lapidary rooms.

Among the smaller museums of the country the Brooklyn Institute Museum is worthy of mention as combining under one roof the science and the art departments. In the art department the most notable collection is that of Tissot's pictures of the life of Christ. The museum has an excellent children's department, which includes a 'type collection' illustrating the leading types of minerals, plants, and animals; also models and objects representing different industries; a small illustrated monthly bulletin is published by this department. Detroit has an excellent and growing art museum; this has in its permanent exhibit a valuable collection of the Old Masters of different schools, including a few small examples of pre-Raphaelite work. Of the modern paintings one of its most notable canvasses is Rembrandt Peale's *The Court of Death.*

In Richmond, Va., the Valentine Museum was established through the bequest of Mann S. Valentine; its primary purpose is the collection and preservation of objects of archæological and anthropological interest; in this department the exhibits of the museum are largely of American races, and many of the specimens are of particularly local interest, having been found in mounds within the state. The museum also has interesting collections of casts, engravings, and tapestries; the last contains what is thought to be the largest piece of tapestry ever brought to this country, *The Sacrifice in the Temple,* dating from the 17th century.

DISCOBOLUS, VATICAN MUSEUM, ROME.

The St. Louis Public Museum is the most recently established of important museums. It was organized in 1904, and obtained important exhibits of the St. Louis Exposition as the nucleus of its collection. The departments at present organized are those of geography, geology, biology, anthropology. The chief departure from customary museum arrangement in the St. Louis museum is in the introduction of the department of geography, partly as the basis for the classification of exhibits, partly to awaken the geographic sense in youthful visitors, and also to display the resources and products of states and countries in a logical and comprehensive manner. In the department of biology, the exhibits are arranged to show both how organisms are modified by human agency, and also how they are utilized in industry. It is planned to add other departments as soon as the growth of the museum warrants; chief among these contemplated divisions are ethnology, archæology, and technology, with special attention to the development of arts and crafts.

In San Francisco, the California Academy of Sciences had a large and interesting museum, including among its specialties collections of the flora of the Pacific coast, the reptiles of California and Lower California, Indian curiosities, and Aztec and Mexican antiquities, in addition to general collections of value. These were unfortunately destroyed in the earthquake of 1906. Much of the material thus lost cannot be replaced. The academy, however, continued its scientific work, and in the same year sent out an expedition to study and obtain collections of the flora and fauna of the Galapagos Islands. The collections of the museum of the University of California, one of the largest in the West, were temporarily housed at the Affiliated Colleges at the time of the earthquake and fortunately escaped destruction.

MUSH, n. *mŭsh* [Ger. *mus*, pap]: the American name for porridge made from Indian-corn meal.

MUSH, v. *mŭsh* [OF. *mouscheté*, spotted; *mouscheter*, to cut with small cuts]: to nick or notch cloth; to cut or indent cloth with a stamp. MUSH'ING, imp.: N. the art or practice of notching or indenting cloth. MUSHED, pp. *mŭsht*, notched or indented as cloth.

MUSHROOM, n. *mŭsh'rôm* [OF. *mouscheron*, and F. *mousseron*, the small, white mushroom—from *mousse*, moss, so named from the nature of the ground on which they may grow: L. *muscus*, moss]: ordinarily an edible fungus which grows wild in pastures or lawns, now cultivated to a large extent in many countries; any edible fungus; or any fleshy fungus (see MUSHROOM, below): *figuratively*, an upstart: ADJ. resembling a mushroom; upstarting. MUSHROOM BED, a bed or space containing compost and soil prepared for the cultivation of mushrooms. MUSHROOM-KETCHUP [see KETCHUP]: a sauce

made from mushrooms. MUSHROOM-SPAWN, the mycelium or thread-like vegetative stage of the mushroom, which, when it penetrates compost or rich earth, may be used in the propagation of mushrooms; the commonest mushroom is the *Agaricus campes'tris,* ord. *Fungi.* MUSHROOM STRAINER, a foot valve formed in the shape of a mushroom, and provided with a perforated strainer plate. MUSHROOM VALVE, a lift valve formed in the shape of a mushroom. *Note.*—In OE. we have the spelling *mush-rump,* and the suggested derivation W. *maes,* a field, and *rhum,* a knob, is given in Brewer's *Dic. of Phrase and Fable.* A conspicuous poisonous mushroom is *Amanita muscaria,* which traditionally may be employed for the destruction of *mouches* or flies, and this is also suggested as the real source of 'mushroom.'

'MUSHROOM: it is now quite generally customary among botanists, and among those who know the fungi, to apply the term mushroom to any one of the fleshy fungi, irrespective of quality or texture, form or family relationships. Any other use of the term leads to much greater confusion. Popularly, however, the more commonly cultivated mushroom, *Agaricus* (*Psalliota*) *campestris* L., may be called 'the mushroom.' Nevertheless, in some regions this latter term may be used to signify some other plant more common in the restricted region. The term may be used to denote all edible fungi, in which sense it has been taken as the opposite of 'toadstool,' which latter, under such circumstances, would signify undesirable or poisonous species. The best usage now invariably sanctions such terms as edible mushrooms, poisonous mushrooms, corky mushrooms, woody mushrooms, etc.

Edible mushrooms constitute a very important article of food in various parts of the world. Indeed, there seems to be no country in which the mushroom is entirely neglected as an article of food. In Europe wild forms are used to a considerable extent. During the season of growth they are gathered and sold in the markets of towns and cities as commonly as species of wild huckleberries or blueberries are to be found on the markets of the eastern part of the United States. During the summer of 1901 there were sold in the vegetable market of Munich nearly two million pounds of wild mushrooms. This represented about 35 species, of which number, however, six species (or groups of related species) furnished nine-tenths of the product. The importance of the mushroom industry from the standpoint of the cultivated species is subsequently mentioned.

The fleshy fungi in general, or mushrooms, are included in two large classes—*Ascomycetes* and *Basidiomycetes.* In the former class the spores are produced within differentiated hyphal cells, or little sacs termed asci. In the latter, the spores, usually four, are borne upon short club-shaped or cylindrical hyphal cells termed

basidia. Among the Ascomycetes there are relatively few fleshy fungi, the important mushrooms of this group being the morels and their allies, included in the genera *Morchella, Gyromytra* and *Helvella* (family *Helvellaceæ*); the truffles of Southern Europe, included in the genus *Tuber* (family *Tuberaceæ*); and the false truffles, of Africa and the Orient, included in the genera *Terfezia* and *Tirmania* (family *Terfeziaceæ*). The truffle and false truffle are elsewhere discussed.

The common morel, *Morchella esculenta* [Ger. *Morchel;* Fr. *Morille*], is widely distributed throughout the north temperate region, occurring usually in open woods. It is sometimes termed the sponge mushroom, on account of the sponge-like character of the head, which is borne upon a stalk of slightly less diameter. The plant is from 2 to 5 inches in height, yellowish-buff to slightly darker in color. The morel appears in the spring, usually from late April to early June in the United States. Excluding the truffle, it is considered the greatest delicacy among mushrooms.

Among *Basidiomycetes* the great majority of species would ordinarily be termed mushrooms. Disregarding very largely the woody forms, which may be of great economic importance only from the standpoint of forest tree or timber diseases, the fleshy fungi of this class of particular interest are merely those which are edible or poisonous. These fungi may be discussed under the following families: *Thelephoraceæ, Hydnaceæ, Polyporaceæ,* and *Agaricaceæ.*

In the *Thelephoraceæ* the basidia are spread out over a considerable portion of the plant. A large number of species are very tough and either skin-like or leathery, and are to be found on decaying trunks, limbs, or even upon the moist ground. Many of these species are important in the disintegration of wood, but none, owing to texture, is of any consequence as food.

The *Clavariaceæ,* sometimes known as Coral Fungi, Stag-horn Fungi, or Fairies' Clubs, are found for the most part growing upon the ground. Species of the genus *Clavaria,* such as *Clavaria formosa, C. aurea,* and *C. botrytes,* are common in the woods in midsummer and may not be mistaken for any injurious forms. They are fleshy, branched and stag-horn fashion. They constitute an important article of food throughout Europe.

The *Hydnaceæ,* or toothed fungi, may consist of bracket-like forms or of species having a true umbrella shape, that is, stem and pileus, and of others consisting of a central stem-like body, which may become much branched and divided, giving rise to a very complex but delicate structure. No matter, however, what may be the form of the fruit body, there are developed, on the one hand from the cap, and on the other from the final branchlets, definite tooth-like structures upon which the basidia are borne. Among the principal edible species

there are two large, fleshy forms with central stalk, occurring widely distributed in Europe and America, namely, *Hydnum imbricatum* and *H. repandum*, both of which grow upon the ground. Of the branched forms the more delicate usual species are *H. coralloides* and *H. erinaceus*, both of which are found growing upon dead trees or decaying trunks. Many species of Hydnum are tough, but no species are injurious and no mistake can be made in selecting these forms for use.

The *Polyporaceæ* include a great variety of species and genera, all of which are characterized by having the fruiting surface differentiated into pores. In this family are included practically all of our common woody or corky bracket fungi growing upon living trees or dead stumps and the like. It includes also some edible forms, such as *Polyporus sulphureus*, the brilliant yellow or orange-yellow species which grows upon many deciduous trees in enormous clusters. The majority of the members of this genus are, however, too tough for use. Nevertheless, in the genus *Boletus* are to be found many edible sorts. All of the species are fleshy, and many are of wide distribution. *Boletus edulis*, commonly known as the Edible Boletus [Fr. *Cèpe;* Ger. *Steinpilz*], is the most common and most valuable edible form. This species, together with two or three related forms, constituted about one-half of the total quantity of mushrooms sold on the market of Munich in 1901. This fungus was known to the early Romans, but not under the name Boletus. It probably constituted the bulk of what were known as *fungi suilli*, which were not, as may be imagined, the most highly prized edible forms.

It is in the *Agaricaceæ*, or gill-bearing species, however, that the great majority of the edible mushrooms are to be found. In this family, also, are included the more poisonous species. The common cultivated mushroom, *Agaricus campestris*, may be taken as a type of this family, although the characters of the various genera are too diverse to be discussed in detail. *Agaricus campestris* consists of a central stem and circular cap, or pileus. The general appearance of the plant is of the form of an umbrella. The stem bears near its upper portion a ring, or annulus, and upon the lower surface of the pileus are to be found the radiating blade-like structures known as the gills. In the maturing plant the gills are pink as they are exposed by the breaking away of the cap from the annulus which attaches it to the stem. Later the gills become dark brown or black. These characters cannot be confused with those of poisonous species. There are a large number of species closely related to the common cultivated form, which are quite as desirable as the latter for table use.

Another type of edible Agaric, which is equally as clearly defined in its characters, is *Pleurotus ostreatus*, the Oyster Mushroom. This species, together with others

closely related to it, is found upon dead or decaying trees and upon logs, etc. It is extremely common in moist situations throughout the summer and autumn. The plants are produced in large, shelving clusters, and the stalks of each plant are but slightly differentiated. The gill-bearing surface is white, though the upper surface of the pileus may be grayish or yellowish. The gills are also usually decurrent, or course downward on the stem.

Another group of *Agaricaceæ* which includes many species with desirable edible qualities is the genus *Lactarius*. In this genus there are certain duct-like tubes, from which, when broken, exudes a milky juice. In using these forms, however, one should become familiar with the different species, since there are one or two which are not considered edible and by some even regarded as poisonous.

The genus *Amanita* includes a number of species which are deadly poisonous and indeed they may be considered the most injurious of all the known fungi. The two species which need to be considered are *Amanita muscaria*, the Fly Agaric, and *A. phalloides*, the Destroying Angel. The former is very widely distributed and particularly abundant in open meadows. The latter is found in similar situations, but the general appearance of the two species is very distinct. They have certain characters in common, such as the parasol shape. The central stalk in both cases bears a ring or veil near the upper extremity and at or near the base there is a cup-shaped or saucer-like structure, through which the plant has emerged, known as the volva. The gills are white, and white spores are produced. In the Fly Agaric, however, the surface of the cap is usually orange red, decorated with small, white patches or scales, which give it a very striking appearance. The Destroying Angel is sometimes a snow-white plant, though forms of this species may have a gray or gray-brown pileus. There are edible species within the genus, but it requires a specialist to determine these. Nevertheless, *Amanita cæsaria*, also a form with an orange red cap but with other characters distinguishing it from the Fly Agaric, was recognized as an edible and highly delicious species in the time of the Roman Empire. It is this species which is referred to as the *boletus* or Royal Mushroom.

Of the many other edible sorts of the *Agaricaceæ*, further reference may be made to but a single genus. The genus *Coprinus* includes the various Ink Caps. The distinctive character of this genus is the deliquescence of the gills, and sometimes of the whole plant, at maturity. The Ink Caps are all of the parasol form and they are very commonly found upon the lawns and in the meadows. They appear frequently in the spring. The common Ink Cap, *Coprinus atramentarius*, has an oval, dark gray cap of fleshy texture. This plant may

be used, as well as any other of the genus, until the deliquescence of the gills has begun. *C. comatus*, the Shag-maned or Maned Coprinus, is the largest of the genus and is highly prized for its qualities wherever it may be found.

In addition to the families of mushrooms thus far discussed, there remain the edible Puff Balls, which are included in the family *Lycoperdaceæ*. Any of the larger species of Puff Balls are valuable edible products. They are commonly found in meadows and pastures, or sometimes even in the garden. *Calvatia cyathiforme*, the beaker-shaped puff-ball, one which is at first white, later becoming slightly purplish, is widely distributed and of excellent flavor. The maximum size which this attains is from five to eight inches. *Calvatia gigantea*, the giant puff-ball, sometimes attains a diameter of two feet. The puff-ball family contains no poisonous species, and any member of this family may be used so long as the flesh is white. As the plant matures the flesh becomes either purplish, brownish or yellowish and the fungus is rendered inedible. This is no doubt due to the formation of injurious compounds as the spores mature, or it may be due to the presence of bacteria, which are usually found in such species when they pass their prime.

The Mushroom Industry.—It is estimated that more than 5,000,000 pounds of the cultivated mushroom were consumed in the United States in 1906, a greater part of this product being imported.

In mushroom culture it is essential to have good spawn, well fermented compost, and fairly uniform conditions of temperature and moisture. Brick spawn is manufactured in England and in the United States, while flake spawn is generally made in France. The spawn must be fresh and vigorous. The compost is made by fermentation of barnyard or stable manure, and the fermenting process requires about three weeks. The favorable conditions of temperature for commercial mushroom growing are found between 50° and 60° F., and a moist but not saturated atmosphere is desirable. Mushrooms may be grown in caves, cellars, specially constructed mushroom houses, or under benches in greenhouses where the conditions of temperature and moisture above indicated may be maintained. They are grown either in flat beds or in ridge beds. The flat beds are usually made about eight to ten inches deep, and of any extent desirable, while the ridge beds are about two feet wide and twelve inches deep. When the compost has been placed in the form of a bed, the spawn is inserted and the beds are, in the course of a week or more, cased with from one to one and a half inches of garden loam. It usually requires from seven to eight weeks for the production of mushrooms, and a bed, bearing under favorable conditions, will continue to yield for two months or more. The yield may vary from one-fourth to two pounds per square foot. In the United

States the market value of mushrooms varies, dependent upon quality and season, from 25 cents to, in exceptional cases, $1.25. Ordinarily the market price is from 30 to 60 cents. The chief markets are New York, Philadelphia, Boston, and Chicago. The chief market of the world, however, is Paris. In the vicinity of this city between eight and ten million pounds of mushrooms are grown annually, and probably half of the total output is consumed within the city, the remainder being shipped either as fresh product to cities of the continent and Great Britain or canned and shipped to America and other countries.

MUSIC, n. *mū'zĭk* [F. *musique*—from L. *musĭcă;* Gr. *mousĭkē*, the art of music: It. *musica*]: any succession of sounds, or combination of sounds, which please and delight the ear; the science of harmonical sounds (see below). MUSICAL, a. *mū'zĭ-kăl*, pertaining to or consisting of music; pleasing to the ear; melodious; sweet-sounding; skilled in music, as 'he is very musical;' producing music, as a *musical* voice. MU'SICALLY, ad. *-lĭ*. MU'SICALNESS, n. *-nĕs*, the quality of being musical. MUSICIAN, n. *mū-zĭsh'ăn*, a skilled musical performer. MUSIC OF THE SPHERES, *among the ancients*, a supposed harmony caused by the motions of the heavenly bodies. MUSICAL-GLASSES, a number of small glass vessels so arranged that a skilful performer can produce sweet music from them. MUSIC-SELLER, a shopkeeper who sells printed music generally, and such musical instruments as pianofortes, organs, harps, etc.

MUSIC: *Explanation.*—Music is the art of combining sounds in such a manner as to delight or impress the ear and, through the sense of hearing, to stimulate the poetic and imaginative faculties. The pleasure derived from listening to music is threefold in nature: the physical sense is gratified by beautiful arrangements and progressions of tone; the intellect follows with interest the structure of the composition and the skill of the performer; and the emotions are stirred by the subtle suggestiveness of the art.

It is in the last quality, *emotional suggestiveness*, that the power of music is most keenly felt. Hence, lack of theoretical knowledge is no fatal hindrance to true enjoyment; the untrained miss much, indeed, but not the vital essence, not the beauty and the poetic appeal. While some persons may remain untouched by a symphony or a fugue, very few are entirely unresponsive to the influence of at least the simpler forms of composition.

Music may be purely instrumental, purely vocal (*a capella*), or vocal with instrumental accompaniment. It is usually sufficient to distinguish between instrumental and vocal writing, the latter including every manner of setting *words* to music.

A distinction is also made between *absolute* music and

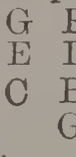
program-music, the latter attempting to depict some event, character, or scene in tonal colors. An orchestral description of a thunderstorm, for instance, would be called program-music.

Full definitions of technical expressions pertaining to music will be found under the proper headings. For present purposes, a very condensed explanation of the most indispensable terms will suffice.

MELODY is an ordered succession of tones of varied *pitch* (see last section of this article).

An INTERVAL is the difference in pitch between two notes. Intervals are named after the number of alphabetical steps or *degrees of the scale* that they contain; thus, from C to G is a *fifth.*

A CHORD is a combination of three or more notes arranged, in their original position, at intervals of thirds above each other, e.g.,



A *consonant* interval or chord is one which requires no succeeding progression to make the sense complete; a *dissonant* interval or chord is one which is unsatisfactory when heard alone. Of the two chords given above as examples, the first is consonant and the second dissonant.

The KEY or *tonality* of a piece is determined by the predominance of a central note called the *tonic,* and of the chord based on this note.

A *diatonic* SCALE is an arrangement of the tones belonging to any one key in ascending or descending order.

A MODULATION is a transition from one key to another.

RHYTHM is the symmetrical grouping of musical pulsations or beats. The *time* of a piece depends on the number of beats and prevailing disposition of accents in each bar or measure. The difference between a march (common time) and a waltz (three-four time) is perceptible to every ear, and affords a good example of differences of time.

In what is called the *Theory of Music,* HARMONY teaches the structure of chords and their use in four parts or voices. COUNTERPOINT, or *polyphony,* is the art of combining different melodies with regard to harmonic propriety. In CANON, a melody propounded in one voice or part is taken up after a short space of time by another, and the imitation is strictly preserved throughout the piece. A canon may be in any number of parts. A FUGUE (L. *fuga, flight*) is a composition of considerable intricacy, written according to certain strict rules in a stated number of parts, usually three or four, and based on a short theme or *subject* which is 'chased' from one voice to another. FORM teaches the principles of musical construction, and INSTRUMENTATION the details of correct orchestral writing.

MUSIC.

The reader is referred for further information to the articles on SONATA; SYMPHONY; CONCERTO; OVERTURE; FORM; ORATORIO; OPERA; MASS; CANTATA; HARMONY; RHYTHM; MELODY; COUNTERPOINT; CANON; FUGUE; ORCHESTRA; etc.

History.—Music is the latest among the arts to have attained a state of maturity—its real history can hardly be said to begin before the 15th century.

Primitive peoples exhibit a rude sense of rhythm and melody. The dances of savage races are usually accompanied by regular beating of hands, stamping of feet, and striking of drums and other instruments of percussion. Songs or chants showing crude melodic invention, and commonly associated with warlike or religious themes, mark the next stage of development, and gradually a 'scale,' more or less perfect, is evolved. To proceed from the invention of tunes, however, to even the most rudimentary use of harmony or counterpoint, is a very long and difficult step.

Egyptian inscriptions prove that the use of certain instruments, notably the harp and a peculiar kind of flute, was common in early ages. With the Hebrews, music was undoubtedly a part of religious ceremonial, especially on festival occasions. The Old Testament abounds in allusions to songs of praise and thanksgiving, and mentions many instruments, but we are very ignorant of the nature of the old Hebrew music. This gifted people, however, have always shown such a marked musical disposition that we may safely infer a comparatively high development, at least of melody, even in its early history.

Among all the nations of antiquity the Greeks, as might be expected, show the greatest advance in music. They were familiar with the most important intervals, and evolved a theoretical system of considerable subtlety. The original basis of their melodies was the *Tetrachord*, a group of four notes compassing a perfect fourth. Their *modes* were composed of two Tetrachords, compassing an octave. The modes differed from modern *scales* in two essential points: (1) they were always conceived as a *descending* series; (2) they were entirely innocent of *tonality*, that is to say, they were in no definite key. Tonality, indeed, is altogether a modern conception, and was not firmly fixed in the minds of musicians until toward the close of the 17th century. The most interesting fact known to us about the Greeks is that they employed musical declamation at their dramatic performances.

The early Christian church adopted the Greek modes, at least in a great measure. For several centuries the music of the church was handed down by tradition. The first serious attempt to reduce it to order was made by Ambrose (Bishop of Milan, A.D. 374), who established

the use of the four 'authentic' modes. Gregory I. (made Pope in 590) collected the hymns and chants sung in the various churches, and is said to have added the four 'plagal' modes. The plain-chant of the Roman Catholic Church is still familiarly known as 'Gregorian' music.

The progress of music under the auspices of the church to the end of the 14th century may be very rapidly sketched. The singing or chanting in the services was at first always in unison, later in octaves, then in progressions of fourths, fifths, and octaves, barbarous in the extreme to modern ears. The *Organon,* or first attempt at counterpoint, consisted originally entirely of these unpleasing successions. Gradually a smoother style was introduced, the good effect of consecutive thirds and sixths found appreciation, dissonant intervals were carefully 'prepared' and 'resolved,' and the foundation of true counterpoint was laid. Only the device of *imitation,* in which an easily grasped melodic figure is taken up in turn by different voices, was now needed to open the way to the greatest beauties of polyphonic writing. Meantime a method of notation was slowly perfected. Hucbald the monk (c. 840-930) gives us the earliest known examples of the employment of parallel lines. Guido d'Arezzo (c. 995-1050) increased the number of lines from two to four, and an unknown innovator completed the staff with a fifth. Guido is also supposed to have invented the system of *Solmisation.*

It is to the Flemish composers of the 15th and 16th centuries that we chiefly owe the wonderful growth of counterpoint. The greatest writers of this school were Dupay (c. 1400-1474), Okeghem (b. about 1430), Josquin des Près (c. 1455-1521), and, above all, Orlando Lasso (c. 1532-1594), who is credited with about 2,500 compositions. The early English school, which somewhat antedated that of the Netherlands, also presents many features of interest. The 'round' or canon *Sumer is icumen in* is, for the date assigned to it by scholars (1226), a truly astonishing production.

Curiously enough, music made no further progress in the Netherlands after the death of Lasso. The Flemish masters, however, had carried their art into Italy, where many of them occupied prominent positions as teachers and in the churches, and to their influence the rise of the Roman school is primarily due. The name of Palestrina (Giovanni Pierluigi Sante, c. 1514-1592) is preeminent in the history of. counterpoint. The greatest master of the Roman school and of the Rom. Catholic Church, his compositions are universally regarded as the highest achievement of vocal polyphony. His services to the church were invaluable. So much scandal had arisen from the employment of profane melodies (and even words) in sacred music, and from the undignified character of much of the contrapuntal writing, that the council of Trent proposed to banish florid composition

entirely from the church. In this crisis, Palestrina, with his celebrated *Missa Papae Marcelli,* showed conclusively that the utmost art of polyphony was strictly compatible with intense devotional feeling. This single mass was the means of preserving polyphony to the church.

It must not be supposed that the evolution of music followed scholarly lines alone. Contemporaneously with the growth of counterpoint there sprang up a rich crop of popular songs and ballads. The charm of these untutored outpourings of the people has been felt in all ages, and hardly any nation is destitute of an interesting literature of folk-song. The Troubadours and Trouvères of France (c. 1080-1350) and the Minnesingers of Germany (1100-1300) were chiefly concerned with pleasing unlearned ears. Folk-song also flourished in England, and, somewhat later, in Italy. The spontaneous quality of this music served as a useful check on the occasionally extravagant subtlety of the contrapuntal masters, who indeed deigned, in many delightful madrigals, to cultivate the lightness and freshness of style from which they were debarred in their masses and motetts.

Vocal polyphony had reached, with Palestrina, a point which set a limit to its progress. A great change was at hand—a change effected with extraordinary suddenness and completeness by a small band of Florentine musicians and literati. These bold pioneers cast polyphony to the winds, and in an effort to revive the ancient musical declamation of the Greeks sought their means of expression in Monody, a simple style of melody accompanied (at first very baldly) by instruments. The great outcome of the new departure was the *Opera* or *Lyric Drama,* and the production of Peri's *Euridice* in 1600 may be said to mark the beginning of modern music. The achievements of the Florentines were soon far excelled by Monteverde of Mantua (1567-1643), who displayed a dramatic talent of high order. He enriched the orchestra, employed the *tremolo* of the strings, and was the first composer who dared to use discords without 'preparation.' His innovations, in spite of their startling character, met with immediate success, and a favor was accorded to the opera which has never since been withdrawn. The Italian Lully (b. Florence 1633, d. Paris 1687) founded a school of opera in France. Purcell (1658-1695) performed the same service in England, and Reinhold Keiser (1674-1739) in Germany, so that in little over a hundred years from the time of its inception opera had become a highly popular form of entertainment throughout the greater part of Europe.

Instrumental music (*per se,* not merely as an accompaniment to voices) began to be much cultivated during the 17th century. The gradual improvement of the instruments themselves was doubtless a potent factor in inducing composers to write independently for them. The spinet and virginals, precursors of the pianoforte,

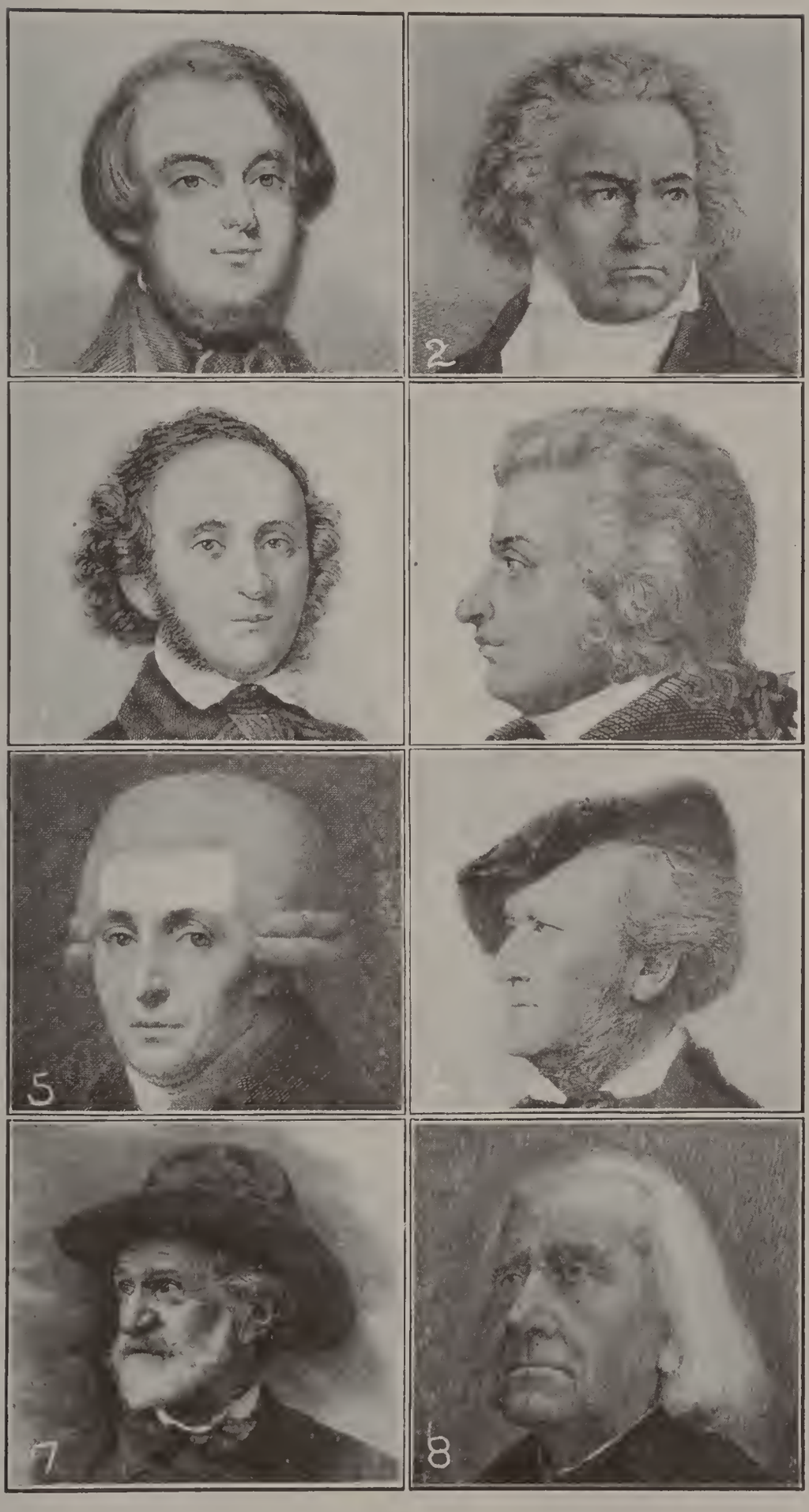
were in great vogue even in the latter half of the 16th century. They were succeeded by the clavichord and harpsichord, which remained in use until supplanted by the pianoforte, the invention of which is ascribed to Cristofori (c. 1709). The violin and other stringed instruments were perfected by the famous makers of Cremona, especially by N. Amati (1596-1684) and Stradivarius (1649-1737). The organ found a congenial home in Germany, where its use was greatly encouraged by the Reformation. The way was thus well prepared for the instrumental composers of the 18th century, among whom may be mentioned the following writers: For keyed instruments—Couperin (1668-1733); Rameau (1683-1764); J. S. Bach (1685-1750); C. P. E. Bach (1714-1788); Haydn (1732-1809); Mozart (1756-1791). For stringed instruments—Corelli (1653-1713); Tartini (1692-1770); J. S. Bach; Haydn (quartets, etc.); Mozart (quartets, etc.). For organ—J. S. Bach; Handel (1685-1759).

Instrumental music found its first really illustrious exponent in Johann Sabastian Bach (1685-1750), one of the greatest composers of all time. His very numerous writings include the beautiful 'Passions,' masses, and an enormous number of other sacred compositions, suites and sonatas for orchestra, violin, and piano; the celebrated 'Well-tempered Clavichord' (a collection of 48 preludes and fugues in all keys); chamber-music, and a host of miscellaneous pieces. His music is so virile, so perfect in the balance between beauty of content and technical mastery, that it has influenced all later composers: even at the present day it is, as Schumann aptly said, the 'daily bread' of the musician. Bach's works for organ, piano (or rather clavichord) and violin are alike indispensable to the modern artist's repertoire. His skill in fugue has never, before or since his time, been equalled; in fact, he is as much *facile princeps* of instrumental polyphony as Palestrina was of purely vocal counterpoint.

Bach's mastery of counterpoint may excite some surprise in view of what has been said of the revolution effected by Peri and Monteverde in the 17th century. The upheaval caused by the 'New Music,' however, had influenced Germany less than other countries. The seriousness of the Teutonic mind had led the German composers, while adopting the merits of the new style, not to neglect the study of polyphony, and the precursors of Bach—Heinrich Schütz, Buxtehude, Kuhnau, etc.—had preserved that purity of four-part writing which has always been the true basis of musical study.

Bach was strongly affected by the Reformation and by the ideas, musical and religious, of Martin Luther. His sacred works show an intense fervor of devotion which could have sprung only from a deep natural piety. On the other hand, Bach was abundantly possessed of

MUSICIANS.



1. Balfe.
2. Beethoven.
3. Mendelssohn.
4. Mozart.
5. Haydn.
6. Wagner.
7. Verdi.
8. Liszt.

the saving grace of humor—a characteristic, by the way, of almost all the greatest composers. Even his fugues often show a delightfully frolicsome spirit beneath their scholarly workmanship.

Handel (1685-1759), born in the same year as Bach, and in some respects rivalling his contemporary's greatness, shows very marked differences of style. In his earlier years he devoted himself to operatic composition. His works of this kind number 40, but they have all, with the exception of a few favorite excerpts, fallen into oblivion. It was not until he had attained the age of 55 that he turned his attention to oratorio, the field in which he was destined to achieve an enviable fame. The best known of his oratorios are *The Messiah, Israel in Egypt,* and *Saul.* In the dignified and massive choruses of these magnificent works Handel's strength is seen at its best. His airs for solo voices are somewhat conventional in structure, but frequently of exceeding melodic beauty and expressiveness.

From the year 1711 until his death, Handel lived in England, and his artistic activity gave an enormous stimulus to that nation's music. Probably it was not an unmixed blessing to the country of his adoption: in the absence of such an overwhelming personality, a school of native music might more easily have asserted itself. Be this as it may, the English people, in spite of its early prominence in counterpoint, its many excellent writers of church music—in spite even of Purcell—has produced no composer of the first rank.

C. W. von Gluck (1714-1787), like Handel, wrote numerous Italian operas, all now forgotten, in the earlier part of his career. Later he completely reformed his style and produced his masterpieces, *Orfeo ed Euridici, Alceste,* and *Iphigénie en Tauride.* These works provoked such hostile criticism in Germany that he sought and found a friendlier audience in Paris. Gluck's music is truly dramatic, suiting itself admirably to the words and situations of the plot, and avoiding those absurdities of Italian opera which Wagner, two centuries later, was once more to attack.

Germany had by this time fully assumed that supremacy in music which she has maintained until the present day. Her classical age produced the *Symphony,* the *Sonata,* and the *String Quartet*—the highest forms of instrumental music. These remarkable additions to the resources of the art are due to the genius of Haydn, Mozart, and Beethoven.

Haydn (1732-1809) is justly called the 'Father of the Symphony.' It was he who brought *sonata-form* (see SONATA) substantially to its modern condition, the construction of the older sonatas and suites only dimly foreshadowing the later type. The Symphony can hardly be said to have had a precursor at all; perhaps the nearest approach to it may be found in the old Overture,

divided by many composers into three distinct parts. (It should be remembered that sonata-form is the basis not only of the Sonata proper but also of the Symphony, the Concerto, the String Quartet, etc.)

Haydn's symphonies and quartets are remarkable for their clarity of form and expression and their geniality of treatment. Received with enthusiasm during the composer's life-time, they still retain much of their charm. The string quartets, indeed, are in some respects superior to Beethoven's, which often attempt more than lies in the power of chamber-music to express.

Mozart (1756-1791) carried on the work of Haydn, developing the symphony and its kindred forms, particularly the *Concerto*. His gift of melodic invention was as marvellous as his mastery of form. A greater contrapuntist than Haydn or Beethoven, he possessed also a dramatic gift which they either lacked or seldom exercised. His operas, in fact—*Figaro, Don Giovanni, The Magic Flute,* and the less-known *Abduction from the Seraglio*—are his masterpieces.

Beethoven (1770-1827) brought the symphony and the sonata to their highest perfection. He easily excelled all his predecessors in the art of orchestration. His writing for the piano revealed capabilities of the instrument not dreamed of before. His opera *Fidelio* excites profound regret that it was his solitary effort at dramatic composition. All this, however, would not alone account for his extraordinary fame. It is because Beethoven was the first to show that music can be made a vehicle for the expression of all human joy and pathos that his name is held in universal veneration. The grandeur and dignity of his conceptions and his immense emotional range, varying from the profundities of passion or despair to the most captivating humor, invested his music with qualities almost new in nature. Only the colossus Bach can compare with him.

The writings which Schubert (1797-1828) crowded into his brief life astonish us no less by their number than by their loveliness. While his chamber-music and many of his symphonies and piano works are immortal, it is in the incomparable beauty of his *songs* that he surpassed all others. His gift of melody exceeded even that of Mozart; it was as inexhaustible as it was appealing. Schubert's untimely death was perhaps the greatest loss that music has ever mourned, for in all probability he had not nearly reached the zenith of his powers. 'Here,' truly says his epitaph, 'music has entombed a rich treasure, but still fairer hopes.'

Mendelssohn (1809-1857) is the last of the classical composers whom we need mention. Irreproachable in treatment of form, highly versatile in his accomplishments, graceful and pleasing in all his work, he rarely rises to impassioned heights of utterance. It may be that his life ran in too easy paths to permit the develop-

ment of the sterner qualities which are called out by struggle and suffering. Yet he served his art well and left us much to be prized.

The formal perfection attained by the classical masters was copied by many inferior composers who lacked their inspired imagination. Hence, a great deal of music of a dry and pedantic character was put forth in the early part of the 19th century. A reaction was inevitable. Even during the lifetime of Beethoven, Weber (1786-1826) had produced his operas *Der Freischütz, Oberon,* and *Euryanthe*—works which introduced a distinctly romantic element and fittingly prepared the world for the music-dramas of Wagner.

The *Romantic* movement is, however, more closely associated with the name of Schumann (1810-1856). Inflexibly opposed to conventionality and empty formalism, endowed with a strikingly vivid and original temperament, Schumann poured into his music an enormous wealth of poetic fancy. In his songs he approached and sometimes equalled Schubert. In his works for the piano, an instrument which he treated with peculiar sympathy, he excelled all others but Chopin. His compositions in the larger forms are, as a rule, not so completely satisfactory, and his instrumentation was comparatively weak. One of the most valuable services he rendered to music was his novel and infinitely varied treatment of *rhythm.* Among all his writings very few pages can be found that are uninteresting or unworthy.

It should not be imagined that any sort of *antagonism* exists between what we call 'classic' and 'romantic' music. Every good classic is in part a romanticist; every romantic composer is to a great extent classical in his methods: it is only in the inclination of the mental balance toward beauty of *form* or toward beauty of *content* that they differ. The distinction, therefore, though essentially truthful enough, is in some respects superficial, and it is well to guard against misunderstanding or exaggeration of its meaning.

In France the new Romanticism was represented by Berlioz (1803-1869), the real parent of Program-music and of modern instrumentation. It is true that isolated instances of Program-music may be found in many earlier composers, but Berlioz was the first to give it prominent place, and his influence on Liszt and Wagner is direct and unmistakable. The orchestration of Berlioz is brilliant and subtle, his use of each particular instrument being as faultless as his blended masses of color are gorgeous.

Chopin (1809-1849) must undoubtedly be classed among the romanticists, though his Polish nationality and entire independence of any school of composition make his position in history almost unique. His works are written almost exclusively for the piano, but in this limited field he accomplished such extraordinary results that he takes

rank among the great masters. No musician has ever penetrated the very soul of the piano as did Chopin. None, it may be added, has so successfully breathed into his music a *national* spirit. Chopin's Polonaises, Waltzes, and, above all, his Mazurkas, are a perfect reflection of the Polish spirit, with all its extremes of feeling and capricious changes of mood.

In such a condensed sketch as the present it is impossible to do more than merely mention the names of Spohr (1784-1859), Marschner (1795-1861), and Raff (1822-1890). We must pass on to the remarkable personality of Wagner (1813-1883), whose life-work utterly revolutionized opera and exerted a strong, if indirect, influence on the instrumental music of our time.

Wagner condemned the whole scheme of Italian opera as unfit for dramatic purposes. A succession of set numbers—choruses, soli, etc.—could never, he declared, suit the action, which might be entirely suspended at a critical or tragic moment in order to allow the hero or heroine to flourish out absurdly into a coloratura aria. He accordingly abolished the set numbers, except where peculiar situations endowed them with appropriateness, and substituted a wholly new form in which the music became a continuous commentary on the plot. The use of *leading motives*—short, pregnant themes expressing prominent characters, objects, or ideas—exalted the importance of the orchestra and made it a living part of the drama, intensifying poetic meaning, suggesting associations between the present scene and others, past or future, and in a thousand ways adding to the beauty and significance of words and action.

Opposition to Wagner's opinions was bitter and prolonged, but his final triumph was complete. His success was due to more causes than one. Not only was he a musician of extraordinary endowments, but he was fortunately capable of writing his own dramas or libretti, while his keen sense of scenic effect enabled him to dictate all details of stage business with the most telling effect. The theatre built under his directions at Bayreuth is a good example of the versatility of his powers, its many new and untried features having proved admirably adapted to their purposes. Musically, the most striking points in Wagner's works are fertility of invention (melodic, harmonic, and orchestral), a power of attaining stupendous climaxes, rich humor, and a transcendent gift for *descriptive* or suggestive writing.

Liszt (1811-1886) deserves more than passing notice, both for his own compositions and for his generous and powerful advocacy of Wagner and many others in their struggles for fame. Liszt's most valuable contribution to music was the *Symphonic Poem*, a form admirably fitted to the highest type of Program-music. His piano works are unequal in quality, often dignified and beautiful, but sometimes marred by a vein of triviality.

Brahms (1833-1897) held sternly aloof from the new departures of Liszt and Wagner. Not attempting to create or even to experiment with novel forms, he consistently upheld classical traditions and 'Absolute' music. His works are still the subject of so much controversy that their historical importance can hardly be estimated with critical accuracy. It may safely be said, however, that in his perfection of form and workmanship he approaches Beethoven, and that the beauty of his songs and chamber-music is unquestionable. Those who are not in sympathy with his style find in many of his writings a want of spontaneity, an abuse of syncopated rhythms, and an excess of sombre coloring.

The Italian and French composers of the 19th century devoted themselves chiefly to opera. Among the Italians, Rossini (1792-1868) and Verdi (1813-1901) are the most prominent. Verdi, in his early compositions the chief exponent of the old Italian school, had the artistic candor to acknowledge the merit of Wagner's reforms, and in his later operas he gradually changed his style until, in *Falstaff* (produced 1893), it had undergone a complete transformation. Among the French composers, we must be content to mention only Thomas (1811-1896), Gounod (1818-1893), and Bizet (1838-1875). Gounod's *Faust* and Bizet's *Carmen* have held the stage ever since their first success, and still show no signs of waning popularity.

Tschaikowsky (1840-1893), the greatest of Russian composers, is another of those writers who can as yet have no place authoritatively assigned to them. The world is still too much under the potent spell of his symphonies and symphonic poems to judge his music dispassionately. For this age, at least, if not for all time, his fame burns brightly.

Among the composers living at the present day or very recently dead, several well-marked national groups may be observed. A new Italian school of opera is represented by Mascagni (b. 1863), Leoncavallo (b. 1858), and Puccini (b. 1858). There is a distinct Russian school, initiated by Glinka (1804-1857), to which belong Rimsky-Korsakoff (b. 1844), Arensky (b. 1862), Glazounow (b. 1865), and Rachmaninoff (b. 1873). The Belgian César Franck (1822-1890) gave a strong stimulus toward the establishment of a modern French school, the most prominent of his successors being Fauré (b. 1845), D'Indy (b. 1851), and Debussy (b. 1862). D'Indy and Debussy have made daring and interesting excursions into the realms of dissonance, while Saint-Saëns (b. 1835) has preferred a more classical path. The Scandinavian writers, Svendsen (b. 1840), Grieg (1843-1907), and Sinding (b. 1856) must also be mentioned. Still more deserving of notice are the Bohemians, Smetana (1824-1884) and Dvorák (1841-1904), and the Hungarian Goldmark (b. 1830), who may conveniently be grouped to-

gether. England boasts Elgar (b. 1857) and Finland Sibelius (b. 1865). Nor has Germany tamely resigned the leadership. Richard Strauss (b. 1864), the apostle of Program-music, is without doubt the foremost musician of the day. He has divided the musical world into two hostile camps, and the rage of their controversy recalls episodes in the life of Wagner. Other German composers of note are Bruch (b. 1838), Humperdinck (b. 1854), Mahler (b. 1860), D'Albert (b. 1864), and Max Reger (b. 1873).

American music, up to the present time, has been essentially an importation from Europe. A national school of composition does not exist, and is certainly not likely to arise (as Dvorák thought it might) from the negro folk-songs, interesting as these may be. The strongest musical personality is that of Edward MacDowell (b. 1861, d. 1908, Jan. 23). This writer shows originality of thought, much sense of color, and capacity for handling large forms; and his works are favorably known abroad as well as at home.

If, however, there is no American composer of the first rank, there are many of distinction: we have reached talent, though genius still eludes us. A list of the most prominent names is given below, and the reader is additionally referred to W. S. B. Mathews's *A Hundred Years of Music in America* and R. Hughes's *Contemporary American Composers.*

Lowell Mason (1792—1872); William Mason (b. 1829, son of the above); Dudley Buck (b. 1839); John Knowles Paine (1839—1907); Arthur Foote (b. 1853); George W. Chadwick (b. 1854); Arthur Whiting (b. 1861); Henry Holden Huss (b. 1862); Ethelbert Nevin (1862—1891); Horatio Parker (b. 1863); Howard Brockway (b. 1870); Frederick S. Converse (b. 1871).

Apart from the question of original production, America has made astonishing musical progress since the time of the Civil war. Considering the great number of large cities, symphony orchestras and grand opera companies are far from numerous, but this is offset by the fact that the majority of such organizations make regular tours through the country. On the other hand, excellent choral societies are found in all the important towns. Conservatories of music flourish everywhere, and their standards of instruction and talent are alike high. Many American singers and performers have earned just recognition, both at home and in Europe. The general interest in music undoubtedly grows year by year more keen and more widely spread, and nowhere do the world's great artists find more generous appreciation than in the United States.

Scientific Basis of Music.—The relation of music to the physical science of Acoustics is but slight. Æsthetic, not natural principles, have governed our formation of scales, practices of harmony, and uses of form. Hence

the practical value of acoustical knowledge is to the musician small, and as a matter of fact, the greatest composers and performers have almost completely ignored it without any detriment to their proficiency. Nevertheless, scientific investigation has brought to light much that is interesting in the phenomena of sound, and has separated that which is immovably based on natural laws from that which is the working of progressive taste.

Musical Sound.—Ordinary sound, or noise, is produced by vibrations of sonorous bodies. Musical sound, or *tone*, is caused by such vibrations succeeding each other at regular intervals of time. All sound is ordinarily transmitted by means of *air-waves* to the human ear, which receives and analyzes them.

Production of Tone.—The periodicity of vibration necessary to produce musical sound as distinguished from mere noise is dependent chiefly on the elasticity of the sonorous body. Tightly stretched strings may be set in regular vibration by being struck (as in the piano), plucked by the finger (as in the harp), or scraped with a rosined bow (as in the violin). Elastic membranes may be set in vibration by a blow (as in the kettle-drum) or by a current of air (as in the human voice). Other means of producing tone are: (1) The vibration of reeds (as in the clarinet and the reed pipes of the organ). (2) The vibration of solid bodies (as in bells and tuning-forks). (3) Vibration set up directly in the air itself (as in the flute and many organ pipes).

Properties of Tone.—Musical sound varies in three ways, viz., in Pitch (relative acuteness or gravity), Intensity, and Quality or character. These differences are found to be caused by corresponding differences in the Rapidity, Amplitude, and Form of vibrations.

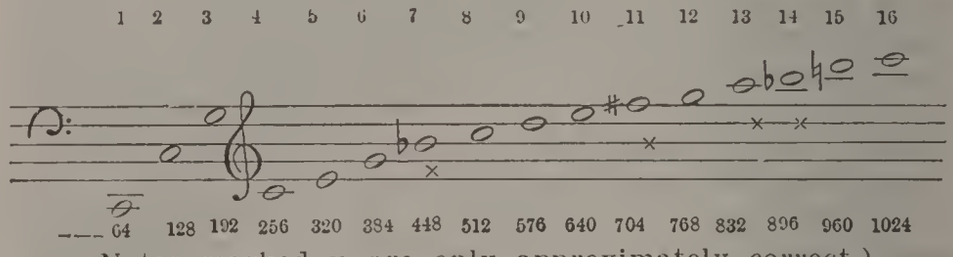
Pitch.—The greater the frequency per second of the air-waves, the higher or more acute is the tone produced. Vibrations of a rapidity of less than about 16 per second or greater than 36,000 per second cannot be perceived by an ordinary ear as musical sounds. Various standards of absolute pitch have been used in the history of music. That giving 256 vibrations per second to the note called 'Middle C' has often been adopted in physical calculations, and will here be used for reference: the present *international pitch* gives to the same note 261 vibrations per second. (It should be observed that whenever pitch is spoken of, the word 'vibration' is used to indicate the *double* vibration of the air-wave.)

Intensity.—The relative strength or loudness of tone corresponds with a greater or lesser amplitude of vibration (extent of displacement of the sonorous body).

Quality.—It is obvious that the violin, the piano, the human voice, etc., differ very much in the character or *timbre* of their tone. These differences were proved by Helmholtz to depend on differences in the form of the vibrations. The matter is somewhat intricate and cannot

be explained without some reference to the phenomena of overtones or natural harmonics.

Overtones (or Partial Tones).—A musical sound rarely consists of one single note. It is usually compounded of a strong fundamental note and many weaker tones which are called overtones or partial tones. An acute ear can readily detect at least some of these overtones if a low note is played with some force on a piano and allowed to resound; and the entire series is determined by simple experiments. The presence of the overtones is due to the fact that most sonorous bodies vibrate not only as a whole, but also in their fractional parts. When a stretched string, for instance, is caused to sound, each half, third, quarter, etc., vibrates independently of the vibration of the string along its whole length. The vibration of the entire string produces the fundamental note, the vibration of the half produces the octave above, the vibration of the third produces the twelfth above, and so on, as shown (up to the sixteenth partial tone) in the following table, the upper figures representing the number of the partial note, and the lower figures the vibrations per second.



(Notes marked x are only approximately correct.)

Now, the difference in the quality of instruments is due to the varying number and intensity of the partial notes composing any one of its tones. The soft, colorless tone of the flute, for instance, is caused by a comparatively *simple* form of vibration (i.e., one almost free from overtones), while the piercing and brilliant effect of the trumpet is due to the great *complexity* of the vibration, many of the high and dissonant overtones being present. And so through all the infinite possibilities of differing quality.

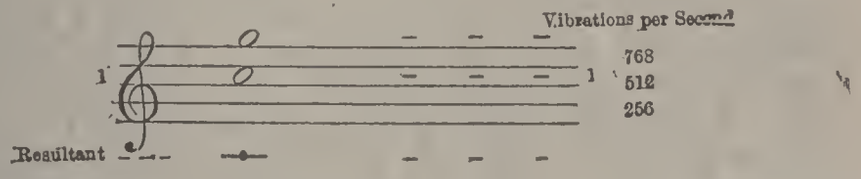
Beats.—When two notes of nearly the same pitch (imperfect unison) are sounded together, *beats* are produced. Thus, if two strings of the vibrational rates of 200 and 202 per second are sounded, the sound waves of the two tones will coincide at every 100th vibration of the first and every 101st vibration of the second, this coincidence being perceptible to the ear as a throb in the tone. The difference between the vibrational rates of the two notes gives the number of beats per second.

With notes separated by other intervals than the unison or octave, *secondary beats* may be caused by coincidences in the vibrations of *overtones* having nearly the same pitch. These secondary beats go far toward explaining the facts of consonance and dissonance (see 'Harmony').

Harshness of effect, or dissonance, is proportional to the roughness of the secondary beats produced by any interval or chord. The octave is the only theoretically perfect consonance, the two notes causing no secondary beats whatever (because the overtones of both are identical). Next in order of consonance come the fifth, the fourth, the major sixth, and the major third. Curiously enough, the augmented sixth (in harmony accounted a dissonance) is less rough than the consonances of the minor third and minor sixth—a scientific fact which our æsthetic sense utterly refuses to recognize.

When secondary beats are very quick or very slow they cause little or no harshness. Helmholtz thought 30 beats per second near the maximum of dissonance.

Resultant Tones.—If a perfectly tuned fifth is sounded, say on a violin, a lower note is faintly heard. This is called a resultant tone or a *difference-tone*, its pitch being determined by the difference between the vibration-numbers of the original notes, e.g.:



The resultant tones were first observed by the violinist Tartini, and were scientifically investigated by Helmholtz. They are of great practical assistance in organ-tuning, correct pitch being found far more easily with their aid than by the unassisted ear.

Equal Temperament.—Scientifically speaking, the note D flat is lower than C sharp, E flat is lower than D sharp, and similarly with all chromatics. Practically, this is true only of instruments forming their own pitch, such as the violin and the human voice. In tuning pianos, organs, etc., it is necessary to adopt some expedient which will permit the use of the instrument in all keys. The system of equal temperament divides the octave into 12 equi-distant semitones, establishing an enharmonic identity between D flat and C sharp, etc. The variations from true pitch are greater for some notes than for others, but never so great as to be disturbing except to the most hyper-sensitive ears, or to forbid the use of piano or organ with violin or voice. Equal temperament is also used for many orchestral instruments. It is difficult to imagine how modern music could have developed without the help of this arbitrary but happy simplification.

MU'SICAL BOX: case inclosing a mechanism so constructed as to produce music by its ordinary action. Some mechanical music has long been a feature of the construction of clocks; but real musical boxes were not known until after 1750. They are constructed on the same principle as barrel or hand organs and mechanical chimes of bells. The principal parts of the mechanism

are the comb, the cylinder, and the regulator. The metal teeth or tongues of the comb, being of varying length and thickness, serve to give different tones when caused to vibrate. The cylinder of brass is set with numerous pins of steel so arranged as to strike the proper tongues and produce the tones required. The cylinder may be moved into several positions, and by extra cylinders a musical box is made to play over 100 tunes. Bells, drums, castanets, may be attached. The best are made at Geneva, Switzerland; others at Prague, and at St. Susanne in France; and musical clocks in the Black Forest, Germany.

MU'SIC RECORDER: apparatus for writing down music in a legible form by the very act of playing it on a keyed instrument, such as the pianoforte or organ. Beginning with 1747, various attempts had been made to effect this object, when, in England, 1863, Mr. Fenby invented and patented his *Phonograph* (quite distinct from Bell's PHONOGRAPH, q.v.). His chief aim, as an improvement on previous apparatus, was to devise a method of denoting the length of the notes, as well as their pitch and the interval between them. On pressing down any key of the instrument, a stud on the under side touches a spring; the spring sets in action a small electro-magnetic apparatus, which causes a tracer to pass against a strip of paper moving onward at a uniform rate by means of a cylinder and clock-work. The paper is chemically prepared, so as to receive a brown stain whenever the tracer passes along its surface. The length of each note is expressed by horizontal dashes of greater or less length, made by the tracer; and the arrangement is such as to denote the lines of the stave as well as the character of the note. By subsidiary adjustments, the apparatus is made to express accidental sharps and flats, changes of time, etc.

The Abbé Moigno's *Phonautograph*, introduced to the British Association 1860, is a contrivance, not for noting down sounds in any kind of musical notation, but for causing a vibrating surface to tell its number and character of vibrations. A kind of spheroidal drum is covered at one end with a diaphragm or stretched membrane; a sheet of paper is carried along this drum-head by means of clock-work; and a system of small levers moves a pen. A tuning-fork, an organ-pipe, or the voice is sounded in proximity to the drum, the body of air within which acts as a reinforcement of the sound; the membrane vibrates in a manner which can be *felt* by the pen, although not seen by the eye; and the pen makes zigzag markings on the paper. When the sound is produced by a tuning-fork or an organ-pipe, the zigzag lines are so regular that they serve to count the number of vibrations belonging to each particular note. When the sound is that of a singing voice, the markings become very peculiar, especially in words containing gutterals *r g*, etc.

MUSIT, n. *mū′zĭt* [OF. *mussette*, a little hole, a corner: F. *musser*, to hide]: in *OE.* and *Shak.*, a small gap in a hedge through which a hare may pass.

MUSK, n. *mŭsk* [F. *musc*, musk—from mid. L. *muscum*; Gr. *moschos*; Ar. *mesk*; It. *muschio*, musk: Skr. *mushka*, a testicle]: a strong-scented substance obtained from an animal inhabiting central Asia, and contained in a bag situated on the belly of the male; a small musk-scented plant—the *Mim′ulus moschātus*, ord. *Scroph′ulārĭā′cēæ*: V. to perfume with musk. Musk′ing, imp. Musked, pp. *mŭskt*. Musky, a. *mŭskĭ*, having the odor of musk. Musk′iness, n. *-ĭ-nĕs*, the quality of being musky; the scent of musk. Musk deer, etc. (see below).

MUSK, or Musk Deer (*Moschus moschatus*): ruminant quadruped, type of the family *Moschidæ*. This family differs from *Cervidæ* (Deer) in the lack of horns, and in the long canines of the males, projecting beyond the lips. The M. is an inhabitant of the elevated mountainous regions and table-lands of central Asia. The habits of the M. are very similar to those of the Chamois. Its favorite haunts are the tops of pine-covered mountains, but its summer range extends far above the region of pines. Its habits are nocturnal and solitary, and it is extremely timid. It is much pursued by hunters for its odoriferous secretion, which has been known in Europe since the 8th c., and is much valued as a perfume. This secretion, *musk*, is produced in a glandular pouch in the hinder part of the abdomen of the males; and its natural use seems to be to increase sexual attractiveness. The musk-bag is formed by an infolding of a portion of the skin of the belly, within which a number of membranes are contained; and between these membranes are glands by which the musk is secreted. When newly taken from the animal, musk is soft, and almost resembles an ointment; it is reddish-brown, and has an excessively powerful odor. Very little of it reaches Europe or America unadulterated.—Musk is usually imported either in the form of *grain-musk*—that is, the musk which has been collected chiefly from stones upon which it has been deposited by the animal, in which state it is a coarse powder of a dark-brown color; or in the *pod*—that is, in the musk-sac, which is cut altogether from the animal, and dried with the musk inside. Of both kinds the importations are about 15,000 ounces per annum, chiefly from China and India. Small quantities are used in medicine, but the greater portion is employed by the perfumers. It is imported in small boxes or catties, often covered with bright-colored silk, and each containing 25 pods. The kinds generally known in trade are the Tonquin or Chinese, worth abt. $10 an ounce in the pod, or abt. $17 an ounce in grain; and the Cabardine, Kabardine, or Siberian, always imported in pod, and inferior, worth about $3.75 an ounce.

The flesh of the M. is sometimes eaten, but has a very strong flavor. The season of migration from the highest

and coldest to more temperate regions is that at which the M. is chiefly pursued.—No other animal of the family *Moschidæ* yields the perfume called musk, or has more than a rudimentary musk-bag. The other species of *Moschidæ* belong to the genus *Tragulus*, and receive the popular name *Chevrotain*. They have a very elongated muzzle; and the accessory hoofs assume the form of appressed conical claws. They inhabit the thick woody copses or jungles of the Indian islands, and are the smallest of ruminant quadrupeds: some are not larger than a hare. Their tusks are not so long as those of the M. One of them, the *Napu* of Java and Sumatra, has the smallest blood corpuscles of any known animal.

MUSK DUCK (*Cairina moschata*): species of duck, of

Musk Duck (*Cairina moschata*), Male and Female.

the non-oceanic section of *Anatidæ* (see DUCK); of a genus characterized by an elevated tubercle at the base of the bill, the edges of the mandibles sinuated, the face and lores covered with a bare tuberculated skin, the wings furnished with a knob or spur at the bend. The M. D. (called MUSCOVY DUCK through mistake, and receiving its name M. D. from its musky odor) is a native of warm parts of America. It is very plentiful in Guiana, in that part of the year which is winter in n. countries. It is larger than the common duck, in its wild state almost black, with glosses of blue and green, and white wing-coverts, but varies considerably in domestication. It is often seen in poultry-yards in other countries, but is rather curious than profitable. It hybridizes readily with the common duck, but the hybrid is sterile.—The M. D. of Australia is a very different species, belonging to the genus *Biziura*.

MUSKEGON, *mŭs-kē'gon:* city, cap. of Muskegon co., Mich.; near the mouth of the Muskegon river and on the Chicago and West Michigan, Grand Rapids and Indiana, and the Toledo Saginaw and Muskegon railroads; 4 m. from Lake Michigan, 38 m. n. w. of Grand Rapids, 90 m. n. w. of Lansing. It has the best harbor on the e. shore of Lake Michigan, has a daily line of steamers to Chicago, is a stopping-place for the e.-shore steam-boats, and is occupied chiefly with the manufacture and shipment of lumber, the annual shipments averaging about 300,000,000 ft., and employing about 150 vessels, besides large shipments by rail. The soil is rich, and much attention is given to peach and grape culture. M. had (1902, Sept.) 3 nat. banks (cap. $300,000), 1 state bank (cap. $50,000), 40 saw-mills, 15 churches, several foundries, machine-shops, railroad shops, boiler-works, and planing-mills, and 3 periodicals. M. was settled 1836; incorporated 1870. Pop. (1890) 22,702; (1900) 20,818; (1910) 24,062.

MUSKELUNGE, *mŭs'kĕ-lŭnj*, or MASKALLONGE, *măs'-kal-lŏnj:* species of fish belonging to the *Esocidæ* or pike family (see PIKE); found in the St. Lawrence river, Lake Champlain, and some other N. Amer. waters. The name is applied sometimes to smaller but closely related species, of which the lake pickerel is one of the most common. It reaches a length of more than four feet and a weight of 40 to 60 pounds. It is caught with a hook or net, and is considered one of the best flavored fishes of its class.

MUSKET, n. *mŭs'kĕt* [mid. L. *muschetta*, a bolt shot from any old warlike instrument for casting stones: Prov. *mosquet;* F. *mouchet;* AS. *mushafoc*, a sparrow-hawk—the implements of shooting being commonly named after different kinds of hawks (e. g., falcon, falconet): It. *mosquetto;* OF. *mousquet*, a musket]: firearm or hand-gun formerly used by soldiers of the line (see below): a young male sparrow-hawk. MUSKET-PROOF, that cannot be injured or penetrated by a ball from a musket or hand-gun. MUS'KETEER', n. *kĕt-ēr'*, a soldier armed with a musket. MUS'KETOON', n. *-kĕt-ôn'* [F. *mousqueton*]: obsolete weapon; a short musket of very wide bore, carrying a ball of five oz., and sometimes bell-mouthed like a blunderbuss. MUSKETRY, n. *mŭs'kĕt-rĭ*, the art or science of firing small-arms; the firing of muskets, or a volley from them; hand-guns in general.

MUS'KET: firearm for infantry soldiers, which succeeded the clumsy arquebus, and in Britain 1851 gave way to the Enfield rifle, which, in its turn, was converted into Snider's patent breech-loading rifle, now known as the Snider-Enfield; the latter arm, so far as the navy, cavalry, and regular infantry are concerned, has been replaced by the Martini-Henry breech-loader, but the auxiliary forces still retain the Snider. The first muskets were matchlocks; after which came wheel-locks, asnaphaans or snaphances, and flint muskets; and lastly, percussion muskets, a vast improvement in accuracy and lightness. Compared, however, to either the Enfield or Martini-Henry rifle, the musket, familiarly known as Brown Bess (possibly corruption of Ger. *büchse*, a hollow tube or gun), was a heavy, ugly, and ineffective weapon. The following is a table of the ranges attained, on an average, by the M., the Enfield, and the Martini-Henry:

	Musket. yds.	Enfield Rifle. yds.	Martini-Henry Rifle. yds.
Accurate fire,	100	600	1,200
Effective against detached parties,	150	800	1,500
Effective against troops in column,	200	1000	1,800

See BREECH-LOADING GUNS: RIFLED ARMS: FIREARMS.

MUS'KETRY, SCHOOLS OF: institutions for instructing soldiers in the use of firearms: rendered necessary by the introduction of the Minié rifle in the French service, and the subsequent arming of the British troops with the still more delicate Enfield rifle, 1851. These changes made the accuracy of a soldier's fire an important element in his value, which with the old musket was not the case, as it was proverbial that the bullet never hit the point aimed at. The English govt. led in providing such instruction, at Hythe, 1854, where officers and promising men were sent for a course of a few weeks, returning to their corps as instructors to their comrades. Before the establishment of this school, the English stood low in the scale of shooting; but competitions during recent years at Wimbledon have shown them equal as marksmen to any nation. The Hythe school is superintended by a commandant and inspector-gen. of musketry instruction, with subordinate instructors. The inspector-gen. is responsible also for the instruction throughout the regiments all over the world, and to him the musketry returns from each regt. are sent annually.

MUSKINGUM, *mŭs-kĭng'gŭm*, RIVER: stream formed in e. central Ohio, by the junction of the Tuscarawas and Walhonding rivers at Coshocton, from which it flows s. and s.e. 115 m., to the Ohio at Marietta, being navigable from Dresden, and supplying important water-power at Zanesville and Marietta. The original settlement by the Ohio Company, 1787–8, was made in the rich valley of the M., and e. of it to the Ohio.

MUSK OX (*Bos moschatus* or *Ovibos moschatus*): animal of the family *Bovidæ*, regarded as a connecting-link between oxen and sheep, allied most closely to the sheep. It inhabits the most n. parts of Amer., enduring the winter even of Melville Island and Banks's Land; but, like many other animals, it is partially migratory, some individuals or herds seeking more s. regions and better pastures on the approach of winter, while some remain in the furthest north. It is not found in Greenland,

Musk Ox (*Bos moschatus*).

Spitzbergen, or Siberia. The M. O. is scarcely equal in size to the smallest of Highland cattle, but appears larger from the profusion of long matted woolen hair with which it is covered, and which hangs almost to the ground. The head also is covered with long hair, the face alone having short hair. Beneath the long hair there is a thick coat of exquisitely fine wool. The head is large and broad; the forehead convex; the extremity of the muzzle hairy. The horns are very broad at the base, and in the male meet on the forehead; they do not rise, but bend down on each side of the head, and curve out and up toward the tip, which tapers to a sharp point: they are about two ft. long measured along the curvature, and about two ft. in girth at the base, a pair of them sometimes weighing 60 lbs. The legs are short, and have short hair. The tail is very short, and covered with long hair, so that it is undistinguishable to the sight. The general color is brown. The female is smaller than the male, has shorter hair on the chest and throat, and smaller horns. The frog of the hoof is short, and partially covered with hair; the foot-marks are very similar to those of the reindeer.—The M. O. feeds on grass, twigs, lichens, etc. It is fleet and active, very sure-footed on rocky ground, and ascends or descends very steep hills with great ease. It is gregarious; the herds generally number 30 or 40. The powerful horns are excellent weapons of defense against wolves and bears, which are often not only repelled but killed. When musk oxen are assailed by firearms, how-

ever, they generally huddle more and more closely together, and do not even seek safety by flight, so long as the assailants are unseen. The flesh is prized by the Esquimaux, but retains much of the strong musky odor which characterizes the living animal. The horns are used for various purposes; particularly the wide base for household vessels. The fine wool has been spun and woven into a fabric softer than silk. No attempt has yet been made to domesticate the M. O.; which, however, seems worthy of it, and suitable for all cold regions.

MUSK PLANT—MUSK ROOT—MUSK TREE—MUSK WOOD: plants whose different parts have more or less strong odor of musk. Among these are the common little Musk Plant (see MIMULUS), the Musk Tree of Van Diemen's Land (see ASTER), and the Musk Ochra (see HIBISCUS).—The musk-tree of Jamaica (*Moschoxylum Swartzii*) belongs to the nat. order *Meliaceæ*. It emits from all parts a smell of musk.—All parts of *Guarea grandifolia*, another tree of the same order, native of the W. Indies, sometimes called musk wood, also have strong odor of musk, particularly the bark, which is used in perfumery.—The drug called MUSK ROOT or SAMBUL is brought from the East, and is the root of a plant supposed to be of nat. order *Umbelliferæ;* but the plant is unknown, nor is it certain whether its native country is Persia, or some more remote region of cent. Asia. It has a pure musky odor, and is used as a substitute for musk.

MUSK RAT, of N. A.: see MUSQUASH.

MUSK RAT (*Sorex murinus*): Indian species of Shrew (q.v.), in size about equal to the common brown rat, in form and color resembling the common shrew, but remarkable for the powerful musky odor of a secretion which proceeds from glands on its belly and flanks. This odor adheres most pertinaciously to any object with which the animal may come in contact, and provisions are often utterly spoiled by it. Even wine and beer are said to be spoiled by it, notwithstanding the glass and cork of the bottle; though the probability is that it adheres to the outside of the bottle, and that the liquid is spoiled as it is poured out. One of the Indian names of this animal is *Sondeli*.

MUSK RAT, or DESMAN, *dĕs'man* (*Mygale* or *Galemys*): genus of insectivorous quadrupeds of the Shrew (q.v.) family (*Sorecidæ*), differing from the true Shrews (*Sorex*) in having two very small teeth between the two large incisors of the lower jaw, and the upper incisors flattened and triangular. Behind these incisors are six or seven small teeth (lateral incisors or false canine teeth) and four jagged molars. The muzzle is elongated into a small flexible proboscis, which is constantly in motion. The eyes are very small; there are no external ears; the fur is long, straight, and divergent; the tail long, scaly, and flattened at the sides. All the feet have five toes, fully webbed; and the animals are entirely aquatic, inhabiting lakes and rivers, and making holes in the banks,

with the entrance from beneath the surface of the water. Only two species are known—one (*M.* or *G. Pyrenaica*) about eight in. long, with tail as long as the body, native

Musk Rat, or Desman (*Mygale Pyrenaica*).

of the streams of the Pyrenees; another larger species (*M.* or *G. moschata*), very plentiful in the Volga and other rivers and lakes of s. Russia, nearly equal in size to the common hedgehog, with tail about three-fourths of the length of the body. The Russ. desman is blackish above, whitish beneath; it has long silky hair, with a softer felt beneath, and its fur is held in some esteem. Desman skins, however, are chiefly valued for the musky odor, which they long exhale, derived from a fatty secretion produced by small follicles under the tail of the animal. The desman feeds on leeches, aquatic larvæ, etc., searching for them in the mud with its flexible proboscis. It seldom, if ever, voluntarily leaves the water, except in the interior of its burrows, which are sometimes 20 ft. long.

MUSLIN, n. *mŭz'lĭn* [F. *mousseline*—said to be from *Mosul*, in Asiatic Turkey, where first made: Venet. *musolin;* mod. Gr. *mousouli*, muslin]: fine thin cotton cloth of any kind: ADJ. made of muslin. MUS'LINET', n.-*lĭn-ĕt'* [dim.]: coarser variety of muslin. MUSLIN-DE-LAINE: see MOUSSELINE-DE-LAINE.—*Muslin* is a cotton fabric of oriental origin, said to be named from the town Mosul, Mesopotamia, where it was largely manufactured. At present no such trade exists there; and for muslins, of the common kinds at least, the Indian market depends on the manufactures of western countries. But no European or Amer. manufacturer has been able to rival the wonderfully delicate muslins of Dacca, whose superiority arises not so much from the fineness of the yarn, though that is very great, but from the marvellous fineness conjoined with most delicate softness to the touch. The fineness of the yarn is so great, that until lately no machinery could produce anything like it; a piece of Dacca M. in the International Exhibition (1862) was 31 ft. in length by 3 ft. in width, and contained in a sq. inch 104 warp threads and 100 weft threads, yet the entire piece weighed only 3½ oz. A French manufacturer has made a M. of English yarn which surpassed the finest

Dacca in the excessive thinness of the yarn, but lacked its delicate softness. M. is much less compact in texture than calico—indeed, it more resembles gauze in appearance; but it is woven plain, without any twisting of the weft threads with those of the warp. The manufacture of muslins in Gr. Brit., France, and the U. S. is very extensive, especially printed muslins, in which the patterns are produced by the same processes as in calico-printing. See WEAVING.

MUSMON, n. *mŭs′mŏn*, or MOUFFLON, n. *môf′lŏn* [L. *musmo;* Gr. *mousmōn*]: animal said to be the sheep in a wild state, and the parent of the domestic sheep, about the size of the common ram; still found in the mountains of Corsica and Sardinia. See MOUFFLON.

MUSNUD, n. *mŭs′nŭd* [Ar.]: a Mussulman throne or cushion of state.

MUSOPHAG′IDÆ: see PLANTAIN-EATER.

MUSPELHEIM, n. *mŭs′pĕl-hīm:* in *Scand. myth.*, the abode of fire, situated on the south, sparks from which formed the stars.

MUSQUASH, n. *mŭs′kwŏsh*, or MUSK RAT, or ONDATRA, *ŏn′da-tra* or *ŏn-dăt′ra* (*Fiber zibethicus*): rodent quadruped, native of N. A.; the only known species of the genus to which it belongs, which is characterized by dentition similar to that of the voles; in some other characters more nearly agreeing with the beaver. The M. is in

Musquash (*Fiber zibethicus*).

shape similar to the brown rat; the head and body are about 15 inches in length, the tail is 10 inches. The whole body is covered with short downy dark-brown fur, intermixed with longer and coarser hairs. It is common in almost all parts of N. A. from lat. 30° to lat. 69°, except in the s. alluvial districts. It is a very aquatic animal, seldom wandering from the rivers, lakes, or marshes in

which it makes its abode. The fur is in demand, and forms an article of commerce—skins in large number being still exported from Amer. to Britain and other European countries. The M. burrows in the banks of streams and ponds; the entrances of its burrows being always under water, so that it must dive to reach them. In marshes, the M. builds a kind of hut, collecting coarse grasses and mud, and raising the fabric two to four ft. above the water. The flesh of the M., at those seasons when it is fat, is in some request among the Amer. Indians, and is said to be palatable.

MUSQUITO, n. *mŭs-kē'tō:* see MOSQUITO.

MUSROLE, n., or MUSROL, *mūs'rōl* [OF. *muserolle* from F. *museau;* OF. *musel*, a muzzle—from OF. *muse*, a mouth—from mid. L. *musus*, a muzzle]: the nose-band of a horse's bridle.

MUSS, n. *mŭs* [OF. *mousche*, a fly, a kind of game]: in *OE.*, name of a game; a confused struggle; a scramble.

MUSSEL, n. *mŭs'ĕl* [L. *muscŭlus*, a little mouse, the shell-fish (see MUSCLE, of which *mussel* is only another spelling)]: a well-known bivalve shell-fish (see below). MUSSEL-BAND, among *miners*, a thin layer or stratum of iron ore, almost wholly composed of shells resembling the existing mussels. MUSSEL-BEDS, areas, in tidal estuaries, occupied by the mussel.

MUS'SEL (*Mytilus*): genus of lamellibranchiate mollusks, type of the family *Mytilidæ*, which, however, is much more restricted than the Lin. genus *Mytilus*. The *Mytilidæ* belong to the division *Lamellibranchiata*, called by Lamarck *Dimyaria*, having two *adductor* muscles—muscles employed in closing the valves of the shell. The mantle has a distinct anal orifice; the foot is small; and there is a large *Byssus* (q.v.), divided into fibres to its base. The valves of the shell are equal; the hinge is destitute of teeth. Some, but few, of the species are found in fresh-water. See DREISSENA. Some (*Lithodomus*) burrow in stone. How they do it is utterly unknown, but they burrow even in the hardest stone; and some small tropical species excavate for themselves holes in the shells of great limpets. The *Lithodomi* are sometimes called *Date-shells*. Some are very beautiful, as are also the true mussels, after the epidermis is removed. Even the COMMON M, (*M. edulis*) then exhibits beautiful veins of blue. This species is much used as bait by fishermen. It is gregarious, and is found in vast beds, closely crowded, adhering by the byssus to rocks, etc. These beds are usually uncovered at low-water. The shell is oblong; at its greatest size about three in. long, and an inch and a half broad. Mussels, when young, move about by means of the foot, with which they lay hold of objects and drag themselves along, until they find some suitable spot to anchor themselves by a byssus. If detached, they soon find another anchorage. In an aquarium they readily attach their byssus-threads even to the smooth glass, and the threads

may be broken more easily than separated from the glass. An ingenious and important application of the strength of these threads has been made by the French, to render Cherbourg breakwater more secure by binding the loose stones together, for which purpose it was *planted* with tons of mussels. The Common M. (Sea-M.) is much used in Europe as food, and is generally found quite wholesome; yet it sometimes proves poisonous, particularly in spring and summer, causing either blotches, swellings, and an eruption, accompanied with asthma, or a kind of paralysis; and even in rare cases producing delirium and death. Though regarded on the Atlantic seaboard of Europe as little inferior to the oyster, this mussel (*Mytilus edulis*) is scarcely used on the Amer. coast either as food or as bait—the soft clam being used in its stead. For the FRESHWATER MUSSEL, see that title.

MUSSELBURGH, *mŭs'sĕl-bŭr-rŭh:* small seaport and royal and parliamentary burgh of Scotland, county of Edinburgh, at the mouth of the Esk, 6 m. e. of Edinburgh. On the w. side of the Esk is the fishing village of Fisherrow. Tanning, leather-dressing, and manufacture of sail-cloth, nets, and salt are carried on. The harbor at Fisherrow is frequented by coasting craft, and by small vessels from Holland and the Baltic. Timber, oil-cake, bark, seeds, and hides are imported; coal is the chief export. On the 'links,' a famous golfing ground, the Edinburgh races take place annually. Pop. 10,000.

MUSSET, *mü-sā',* LOUIS CHARLES ALFRED DE: French poet of the first rank: 1810, Dec. 11—1857, May 2; b. Paris; of anc. family. He studied in succession medicine, law, finance, and painting; but finally, under the influence of the Romantic School (q.v.), turned to poetry. The first work that attracted notice was *Les Contes d'Espagne et d'Italie* (1830), which by their elegant but audacious sensuousness gave deep offense. *Le Spectacle dans un Fauteuil* (1832) is a strange medley of contrasts. *Les Nuits* (1840) admittedly show his lyrical power at its best. Many of the *Comédies et Proverbes* were popular on the stage; and M. wrote several prose romances. In 1852 he was admitted to the French Acad. He died at Paris. The exquisite beauty, tenderness, and power of much of M.'s work is continually marred by the morbid pessimism of a man prematurely old, disillusioned, *blasé;* on this very ground M. is often regarded as the representative poet of the modern Parisian. M.'s life was irregular, and he suffered from heart-disease: probably his genius was thus hampered, and his reputation as a writer lowered during his life. Since his death leading critics have accorded him a place with the most eminent French poets.

MUSSULMAN, n. *mŭs'ŭl-mân,* MUSSULMANS, n. plu. *-mânz* [Turk. *musslim,* a follower of *Islam,* a true believer —from Ar. *salam,* meaning peace or rest: *musslimin* or *musslimun,* Moslems]: follower of Mohammed; true be-

liever in Mohammed. M. is equivalent to Moslem, of which word it is, properly speaking, the plu.; used in Persian fashion for the sing., so that the Eng. plu. *Mussulmans* is really a double plural. This Arabic plural termination 'án' has nothing to do with the Eng. word *man;* hence an Eng. plu. in *men* is barbarous and absurd. MUS'SULMAN'IC, a. *-măn'ĭk*, pert. to. MUS'SULMANLY, ad. *-lĭ*.

MUST, v. *mŭst* [AS. *motan;* Ger. *müssen;* Dut. *moeten*, to be forced: Sw. *maste*, must: Bohem. *musyti*, to be forced to do]: an auxiliary verb which implies 'necessity or obligation.'

MUST, n. *mŭst* [L. *mustum;* F. *moust*, the juice of grapes, new wine: Russ. *mest;* Ger. *most*, juice of fruits: Sw. *must*, juice, sap]: the unfermented juice of ripe grapes; new wine.

MUSTACHE, n. *mŭs-tâsh'*, MUSTACH'ES, n. plu. *-tâsh'ĕz* [see MOUSTACHE]: hair on the upper lip. MUSTACHED, a. *mŭs-tâsht'*, having mustaches. MUSTACHIO, n. *mŭs--tâsh'ō* [Sp. and It. *mustacchio*]: hair of the upper lip—another spelling of *mustache*. MUSTACH'IOED, a. *-ōd*, having mustachios.

MUSTANG, n. *mŭs'tăng:* the wild horse of the prairies of Mexico, California, etc., small and hardy: see PONY.

MUSTARD, n. *mŭs'tĕrd* [OF. *mostarde;* F. *moutarde*, mustard: Venet. *mostarda*, a sauce: Sp. *mostaza*, thickened must; *mostazo*, mustard], (*Sinapis*): genus of plants of nat. order *Cruciferæ*, having yellow flowers, and linear or oblong pods, which terminate in a sword-shaped and compressed or 4-cornered beak, and contain one row of seeds. The seeds are globular, and their Cotyledons (q.v.) conduplicate.—The most important species is BLACK M. (*S. nigra*), an annual, which grows wild in fields and by waysides. Its pods are bluntly 4-angled, smooth, erect, and lie close to the stem, their valves 1-nerved; the leaves are smooth, the lower leaves lyrate, the upper leaves linear-lanceolate. The seeds are brownish black.—WHITE M. (*S. alba*) is an annual, having divergent pods covered with stiff hairs, the valves 5-nerved, the seeds yellowish, the leaves pinnatifid.—Both these species are cultivated for their seeds, which are ground into powder and mixed with water, to make the well-known condiment called *Mustard*. The powder of the seeds is much used also in medicine as a rubefacient. The use of M. as a condiment is often found favorable to digestion. M. seeds depend for their pungency on a principle which, when water is added to Black M., forms *Volatile Oil of M.* (See MUSTARD, OIL OF.) There is also in the seeds a bland fixed oil, *Oil of M.*, obtained from them by expression, and constituting about 28 per cent. of their weight. The cake which remains after the oil is expressed is too acrid to be freely used for feeding cattle. It is Black M. chiefly which is cultivated, its seed being more pungent and powerful than that of White M.; but there is more difficulty in removing the

skin of its seed than that of White M., which is therefore often preferred. M. requires very rich soil. Wisbeach, in Cambridgeshire, is the great M. market of England.—White M. is often sown in gardens and forced in hothouses, to be used in the seed-leaf as a small salad, having a pleasant pungency. It is also sometimes sown for feeding sheep, when turnip or rape has failed, being of very rapid growth, though inferior in quantity of crop. —Wild M., or Charlock (*S. arvensis*), distinguished by turgid and knotty pods with many angles, and longer than the two-edged beak, is a most troublesome annual weed in corn-fields, often making them yellow with its flowers in the beginning of summer. Its seeds are said to have yielded the original *Durham M.*, and are still gathered for mixing with those of the cultivated species. The bland oil of the seeds is used for lamps.—Pekin M. (*S. Pekinensis*) is an annual, very extensively cultivated in China, its leaves being used as greens. It is quite hardy in the climate of Britain.—Indian M. (*S. ramosa*) is extensively cultivated in India for its seeds, which are used as condiment; as are those of *S. dichotoma* and *S. glauca*, also cultivated in India. The oil of the seeds is used throughout India for lamps.—Hill M. is a different genus, *Bunias* (q.v.).—The M. Tree of Scripture is supposed by some investigators to be *Salvadora Persica*, a small tree of nat. order *Salvadoraceæ*, a small order allied to *Myrsinaceæ:* it grows to a height of 25 to 30 ft., and abounds in many parts of the East. Its seed has an aromatic pungency, and is used like mustard. The fruit is a berry with a pungent taste. But some eminent writers dissent, on what seem good grounds, from this view, and consider the M. Tree of Scrip. (Matt. xiii. 31; Mk. iv. 31; Lk. xiii. 19, etc.) to be one of the varieties of the M. plant (*Sinapis*), deeming this to agree better with the terms of Christ's parable. To the objection that this plant is a low bush and no tree, Prof. Henry B. Hackett replies that he saw it growing extensively in Palestine to a height of 8 or 9 ft., and furnishing resting-place for birds.

Manufacture.—The manufacture of M. consisted originally, and indeed on the Eur. continent consists still, in simply grinding the seed into a very fine meal. A false taste, however, arose for an improved color, and the flour of mustard was introduced, in which only the interior portion of the seed is used, the husk being separated, as the bran is from wheaten flour. This causes great loss of flavor, as the pungent oil, on which the flavor chiefly depends, is in greatest abundance in the husk.—Hence other materials, such as capsicum powder, and other very pungent matters, are added to bring up the flavor, and wheaten flour and other substances are added to increase the bulk and the lightness of color. Indeed, so many adulterations have been added, that the M. of Eng. and Amer. tables can no longer be regarded as other than an elaborately compounded condiment, for which each manufacturer has his own particular recipe

MUS'TARD, OIL OF: essential oil yielded by distillation of the seeds of Black Mustard with water (see MUSTARD); in reality, allyl isothiocyanate, $N(CS)(C_3H_5)$ (see GARLIC, OIL OF), contaminated with a little brown resinous matter, from which it may be freed by simple redistillation. The seeds both of the black and the white mustard yield by expression a large quantity of a bland fixed oil, but they do not contain any essential or volatile oil ready formed.

When first obtained, this oil is a colorless fluid, which gradually becomes yellowish. It has a painfully pungent odor and acrid taste; and when applied to the skin, it speedily raises a blister. It is soluble in all proportions in alcohol, but dissolves very sparingly in water. Its specific gravity is 1.009 at 59° F.; it boils at 298·4° F. This oil and oil of garlic, $(C_3H_5)_2S$, are naturally convertible into one another (see GARLIC, OIL OF); in combination with ammonia it forms a compound termed *thiosinnamine*, $N_2H_3(C_3H_5)(CS)$ which combines directly with acids like a true organic base. Its mode of formation is explained by the equation—

Oil of Mustard. Ammonia. Thiosinnamine.

$$\overbrace{C_6H_5,C_2NS_2} \quad \overbrace{NH_3} \quad = \quad \overbrace{C_8H_8N_2S_2}$$

By digesting oil of mustard with alkalies, or with hydrated oxide of lead, we obtain also a feeble base termed *sinapoline*, whose formula is $C_7H_{12}N_2O$.

The oil is formed in much the same way as the Volatile Oil of Almonds (q.v.). The black mustard contains the potash salt of a compound termed *myronic acid*, and a peculiar coagulable nitrogenous ferment, *myrosin*, which, when the crushed seed is moistened with water, act on each other, and develop the oil. It is the gradual formation of this oil, when powdered mustard and warm water are mixed, that occasions the special action of the common mustard poultice. The pungency as a condiment of mustard, of horse-radish, etc., is due mainly to the presence of this oil.

MUSTEE, n. *mŭs'tē:* in the *Indies*, the child of a white and a quadroon.

MUSTELIDÆ, *mŭs-tĕl'ĭ-dē:* family of digitigrade Carnivora (q.v.), mostly forming the genus *Mustela* of Linnæus; now divided into a number of genera, in which are ranked the weasel, ermine or stoat, sable, marten, ferret, pole-cat, mink, skunk, etc. The M. are distinguished by elongated form of the body and shortness of limbs; also by having generally four or five molars on each side in the upper jaw, and five or six in the lower. On each side of both jaws there is a single tuberculate tooth. All the feet have five toes. The skull is much elongated behind the eyes. The M. have great litheness and suppleness of movement. They are very carnivorous. Otters are ranked among them.

MUSTELINE, a. *mŭs-tēl'īn* [L. *mustēlă*, a weasel]: pertaining to animals of the weasel kind.

MUSTER, n. *mŭs'tĕr* [Ger. *mustern*, to muster or review: OF. *monstrer*, to show: OF. *mostre* for *monstre*, a view, a sight: It. *mostra*, a show, a review; *mostrārĕ*, to show—from L. *monstrārĕ*, to show]: assembling of troops or sailors for review and personal inspection; any assembling or gathering; act of collecting: V. to collect or assemble for military duty or review; to assemble troops for individual inspection and verification; to bring together; to assemble. MUS'TERING, imp. MUS'TERED, pp. *-tĕrd*, assembled or gathered together. MUSTER-BOOK, a book in which troops are registered. MUSTER-ROLL, an authorized list of the officers and men in a company, regiment, etc. MUSTER-MASTER, one who superintends a muster of troops. TO MUSTER UP, to gather or obtain with some effort. TO PASS MUSTER, to pass inspection without censure or blame.—A *Muster* is a calling of the names of all the men composing a regt. or a ship's company. Each man present answers to his name, those not answering being reported absent. The muster-roll from which the names are called is the paymaster's voucher for the pay that he issues, and must be signed by the commanding officer, the adjutant, and himself. The crime of signing a false muster-roll, or of personating another individual at a muster, is held most severely punishable. In regiments of the line, a muster is taken usually each month; in ships of war, usually each week. The muster after a battle is a melancholy proceeding, intended to show the vacancies wrought by death. In early times, in Europe, before the army was a standing force, and when each capt. was a sort of contractor to the crown for so many men, the muster was most important, as the only security that the sovereign had for really obtaining the services of the number of men for whom he paid. Accordingly, any raud brought liability to punishment by death.

MUSTY, a. *mŭs'tĭ* [Gael. *musg*, matter that gathers round the eyes; *musgach*, moldy: prov. Dan. *musken*, musty]: spoiled with damp, mold, or age; having an ill flavor or smell; stale; dull; heavy. MUS'TILY, ad. *-tĭ-lĭ*. MUS'TINESS, n. *-nĕs*, the quality of being musty or ill-flavored. *Note.*—MUSTY may be derived from *must*, new wine, referring to the smell of the vessel after being emptied of its contents. Chaucer uses *moisty* with respect to ale, meaning 'new ale'—see Skeat.

MUTABLE, a. *mū'tă-bl* [L. *mutābĭlĭs*, that is easily or often changed—from *mūtō*, I change: It. *mutabile*]: subject to change; changeable; alterable; unsettled; inconstant. MU'TABLY, ad. *-tă-blĭ*. MU'TABLENESS, n. *-bl-nĕs*, or MU'TABIL'ITY, n. *-bĭl'ĭ-tĭ* [F. *mutabilité*]: the quality of being mutable; changeableness; instability. MUTATION, n. *mū-tā'shŭn*, change; alteration.—SYN. of 'mutable': variable; fickle; versatile; unstable; unsteady; wavering; irresolute.

MUTAGE, n. *mū′tāj* [F. *muter*, to improve with sulphur, said of wine—from L. *muto*, I change]: the process of sulphuring grape-must to prevent or arrest fermentation.

MUTCHKIN, n. *mŭch′kĭn* [Scot.]: a Scotch liquid measure, equal to four gills, or an imperial pint.

MUTE, n. *mūt* [F. *mutir*, to mute, as a hawk; *esmeut*‘ the droppings of a bird: Icel. *smelta*, to liquefy]: dung of birds: V. to cast out the contents of the bowels, as birds. MUTING, imp. *mū′tĭng:* N. the dung of birds. MU′TED, pp.

MUTE, a. *mūt* [L. *mutus*, silent, speechless—imitative of the attempt to mutter low sounds, represented by *mu:* Serv. *muk*, silent; *muchati*, to be silent: It. *muto:* F. *muet*]: silent; uttering no sound; not having the power of utterance; not sounded, as a letter: N. one naturally unable to speak; one remaining wilfully silent; in *gram.*, applied to those consonants which intercept the voice in utterance, as *k*, *p*, and *t:* an attendant at a funeral: in *Turkey*, a dumb attendant; an executioner who is a dumb man. In *music*, little instrument of wood or brass used on a violin or violoncello, to soften or deaden the sounds. It is made of hard-wood, ivory, or brass, and is attached to the bridge by means of a slit, a leg of it being interjected between every two strings. The use of the mute both softens the tone and imparts a peculiar muffled and tremulous quality sometimes very effective. Its application is indicated by the letters *c. s.*, or *con sordino*, and its discontinuance by *s. s.*, or *senza sordino*. The mute is used sometimes for the cornet also, being inserted into the bell of the instrument, subduing the sound, and producing the effect of great distance. MUTELY, ad. *mūt′lĭ*, in a mute manner; silently. MUTISM, n. *mū′tĭzm*, the condition of being unable to give utterance to articulate sounds; the total want of speech.—SYN. of ‘mute, a.’: dumb; speechless; unpronounced; unvocal.

MUTICUS, a., or MUTICOUS, a. *mū′tĭ-kŭs* [L. *mŭtĭcus*, without a beard or awn]: in *bot.*, without any pointed process or awn; pointless.

MUTILATE, v. *mū′tĭ-lāt* [L. *mutĭlātus*, maimed or mangled: Gr. *mutĭlos*, curtailed: It. *mutilare:* F. *mutiler*]: to maim or mangle; to cut off any important or material part; to render imperfect; to garble or only partially represent; to castrate. MU′TILATING, imp. MU′TILATED, pp.: ADJ. maimed or mangled. MU′TILATOR, n. *-lā-tėr*, one who mutilates. MU′TILA′TION, n. *-lā′shŭn* [F.—L.]: the act of depriving of a limb or an essential part; the state of being mutilated.—SYN. of ‘mutilate’: to hack; cut; cripple; destroy; mangle; castrate.

MUTINE, n. *mū′tĭn-ē:* OE. for MUTINEER.

MUTING: see MUTE 1.

MUTINIED, MUTINOUS: see under MUTINY.

MUTINY, n. *mū'ti-nĭ* [OF. *mutiner*, to mutiny or rise in arms—from *mutin* for *meutin*, turbulent, unquiet—from *meute* (*émeute*), a sedition—from L. *moveo*, I move: comp. Dut. *muyten*, to mutter, to murmur; L. *mutio*, a muttering]: in the *army* or *navy*, a refusal of obedience to lawful authority by a subordinate; insurrection of soldiers or sailors against their officers: V. to rise in insurrection against the authority of their officers, or against the head of the state, by soldiers or sailors. MU'TINYING, imp. MU'TINIED, pp. *-nĭd*. MU'TINEER', n. *-nēr'*, one who mutinies. MU'TINOUS, a. *-nŭs*, disposed to or guilty of mutiny; seditious. MU'TINOUSLY, ad. *-lĭ*. MU'TINOUSNESS, n. *-nĕs*, the state of being mutinous; a spirit of insubordination to superiors.—*Mutiny* is the term used to denote behavior either by word or by deed subversive of discipline, or tending to undermine superior authority. Till lately, M. in Britain comprised speaking disrespectfully of the sovereign, royal family, or general commanding, quarrelling, and resisting arrest while quarrelling; but these offenses have now been reduced to the less crime of 'mutinous conduct.' The acts now constituting M. proper are: exciting, causing, or joining in any M. or sedition; when present thereat, failing to use the utmost effort to suppress it; when, knowing of a M. or intended M., failing to give notice of it to the commanding officer; striking a superior officer, or using or offering any violence against him, while in execution of his duty; disobeying the lawful command of a superior officer. The punishment awarded by the Mutiny Act (q.v.) to these crimes is, if the culprit be an officer, death or such other punishment as a general court-martial shall award; if a soldier, death, penal servitude for not less than four years, or such other punishment as a general court-martial shall award. The U. S. laws on this subject are similar in general principles to those of Gr. Britain. As the crime of M. has a tendency immediately to destroy all authority and all cohesion in the naval or military body, commanding officers have full powers to stop it summarily. A drum-head court-martial may sentence an offender, and if the case be urgent, and a spread of the M. apprehended, the immediate execution of sentence of death on the mutineer may follow within a few minutes of the detection of his crime. It, however, behooves commanding officers to exercise this extraordinary power with great caution, as the use of so absolute an authority is narrowly and jealously watched. Officers are held under obligation to use all reasonable measures to prevent discontent among their men from rising into mutiny.—See MILITARY LAW: COURT-MARTIAL.—SYN. of 'mutiny', insurrection; sedition; rebellion; revolt; revolution; uprising; uproar; strife.

MU'TINY ACT: former annual or semi-annual act of the British parliament, investing the crown from year to year with powers to regulate the govt. of the army and to frame articles of war. The navy stands under Naval Discipline Acts, 1861 and 66, successors of acts which, unlike the M. A., remained in force for an indefinite time. By the Bill of Rights, the maintenance of a standing army in time of peace, unless by consent of parliament, was declared illegal, and from that time the number of troops to be maintained, and the cost of the different branches of the service, have been regulated by an annual vote of the house of commons. But parliament possesses a further control over the army. Soldiers, in time of war or rebellion, being subject to martial law, may be punished for mutiny or desertion; but the occurrence of a mutiny in certain Scotch regiments, soon after the Revolution, raised the question, whether military discipline could be maintained in time of peace; and the courts of law decided that, in the absence of any statute to enforce discipline, a soldier was amenable only to the common law: if he deserted, he was liable only for breach of contract; or if he struck his officer, to an indictment for assault. The authority of the legislature became indispensable to the maintenance of discipline; and parliament, 1689–1879, at the beginning of every session, conferred anew this and other powers in the M. A. The act, having long been found defective and cumbrous, was superseded by vote of parliament 1879 by an act, also to be passed annually as the 'Army Discipline and Regulation Act.'

MUTISM: see under MUTE 2.

MUTSUHITO, or MUTS-HITO, *môts-hē'to*, Emperor of Japan: 123d mikado: b. 1850, Nov. 3; 2d son of the mikado Komei Tennō (1847–67). He has no family name, and his titular name means 'man of peace.' He grew up in the seclusion of the palace; at 19 years of age had never seen a foreigner; was declared emperor at his father's death, with a regent in charge of the govt. The regency was overthrown by a movement of an advanced party under the lead of Iwakura and his associates; a new govt. was proclaimed, with M. as active mikado; and the office of 'Tycoon' was abolished by a decree 1868, Feb. 4. On Mar. 23, M. gave an audience to the ministers of France and Holland, the first that an emperor of Japan ever granted to representatives of any Christian nation. On the occasion of a similar audience sought by the British minister, Sir H. S. Parker, an attack on his attendants was made by assassins. The following day an imperial decree declared the outlawry of all such fanatics, and definitely promulgated the new era of open relations of Japan, by treaty and diplomatic intercourse, with foreign nations. April 6, in the great hall of the castle of Nijo in Kioto, the mikado took an oath promising government by public discussion, the disuse of 'the uncivilized customs of former times,' the

search throughout the world for learning and the means of intellectual advancement, and whatever would bring Japan into the path of modern civilization. The national cap. was removed to Tokio 1869, Feb. 7, and shortly afterward M. married Ichijo Tadaka, a lady of the 2d degree of the first rank of the nobility. In 1872 he adopted European dress and habits of life; and 1873 began the introduction of a system of education under a supt. from the United States (see MURRAY, DAVID). The progress of change to the present time has been constant and healthy.

MUTTER, v. *mŭt'ẽr* [L. *muttīrĕ*, to mutter, to utter low sounds: comp. Swab. *mottern*, to make sour faces; Gael. *muchadh*, speaking or singing in a low tone]: to speak in a low tone with compressed lips; to speak in low indistinct tones; to murmur; to grumble; to give out a low rumbling noise: N. an obscure or imperfect utterance; a murmur. MUT'TERING, imp.: ADJ. uttering words in low suppressed tones. MUT'TERED, pp. *-tẽrd:* ADJ. uttered in low suppressed tones. MUT'TERER, n. *-tẽr-ẽr*, one who mutters. MUT'TERINGLY, ad. *-lĭ.*

MUTTON, n. *mŭt'n* [F. *mouton*, a wether, a sheep—from mid. L. *multonem:* Ir. and Manx, *molt;* Gael. *mult;* W. *mollt*, a wether, a sheep]: the flesh of sheep. MUTTON-CHOP, a rib chopped from the loin. MUTTON, *OE. slang*, a bawd, a whore. MUTTON-MONGER, a whoremonger. MUTTON-FIST, a large, red, brawny hand.

MUTTRA, *mŭt'trâ*, or MATH'URA: town of British India, cap. of a dist. in N.W. Provinces, 97 m. s.s.e. of Delhi; on the right bank of the Jumna. The fort was built by the famous astronomer, Jey Singh (who became Prince of Amber 1693); and on the roof of one of the apartments is a ruinous observatory, containing a great number of astronomical instruments. Access to the river—which, with the town, is considered sacred by the Hindus—is by numerous ghâts, ornamented with little temples; and its banks are, every morning and evening, crowded by devotees of all ages and both sexes, to perform their religious exercises. In Hindu Myth., it is regarded as the birthplace of the divinity Krishna. In honor of the monkey-god Hanumân (q.v.), monkeys are here protected and fed, being allowed to swarm everywhere. There are also great numbers of paroquets, peacocks, and sacred bulls at large, without owners. There is a very extensive military cantonment about a mile s. of the town. M. appears at an early period to have been much more important than it is at present; and its enormous wealth and splendor made it an object of attack to the first Afghan invaders. Mahmûd of Ghiznei, 1017, gave it up to plunder, breaking down and burning all th idols, and amassing a vast quantity of gold and silver, of which the idols were made. After this calamity, it sank into comparative obscurity. In 1803, it was, without resistance, occupied by the British troops. Pop. (1881) 57,724; (1901) 60,042.

MUTUAL, a. *mū'tū-ăl* [F. *mutuel;* Sp. *mutual*—from mid. L. *mutŭālis*—from L. *mūtŭus*, equal on both sides]: interchanged; given and received; each acting in return or correspondence to the other; reciprocal. MU'TUALLY, ad. *-lĭ.*—SYN. of 'mutual': common; correspondent; alternate.

MU'TUAL INSTRUCTION: see MONITORIAL SYSTEM.

MUTULE, n. *mū'tūl* [F. *mutule*, a corbel, a bracket]: in *arch.*, plain projecting block worked under the corona of the Doric cornice, in the same situation as the modillions in the Corinthian and composite orders, and having a number of guttæ or drops worked on the under side (see ENTABLATURE). MU'TULED, a. *-tūld* ornamented with mutules.

MUTUUM, *mū'tū-ŭm:* term in Scotch law, from the Roman law, denoting a contract of loan of a certain kind of things, e.g., corn, wine, money, which are consumed in the use, and of which the borrower is bound to restore as much at some future time.

MUZA IBN NOSEYR: Arab conqueror of Spain: 640–717. He displayed great bravery and high military talents in the contests of that turbulent period, and was appointed by the caliph gen. of the army raised for the conquest of Africa 698–9. In 707 he set out for Mauritania, conquering the kindred tribes of e. Barbary, and enrolling their warriors under his standard; and by 709 the whole of n. Africa, including the Gothic strongholds on the coast, acknowledged the authority of the caliph. At this period the Gothic monarchy in Spain was in utter disorganization, and M., seizing the favorable opportunity, sent his lieut., Tarik Ibn Zeiad, 711, Apr., to make an incursion into Spain. Tarik landed at Gibraltar, and marched inland to the banks of the Guadalete, where he was met by Roderic, the Gothic king. In the battle which ensued, the Goths were decisively vanquished, their king perished in the waters of the Guadalete, and the whole of s. Spain lay at the mercy of the victor. M., hearing of these successes, sent orders to Tarik to halt for further instructions; but the lieut., flushed with success, pressed on to the very centre of Spain, and seized Toledo, cap. of the Gothic kingdom. M. immediately set out for Spain at the head of 18,000 men (712, June), took Seville, Carmona, Merida, and other towns, and then marched on Toledo, where he joined Tarik, whom he caused to be bastinadoed and incarcerated, but afterward reinstated in obedience to an order from the caliph. M. then marched first n.w. and then e., subduing the country; he then crossed the Pyrenees into France, but soon returned to Spain, where he and Tarik received messages from the caliph, commanding their immediate presence at Damascus; Tarik immediately obeyed, but M. delayed till a second message was sent to him. On reaching Damascus, he was treated with neglect, and, on the accession of the Caliph Suleiman, was cast into

prison, and mulcted in 200,000 pieces of gold; his two sons were deprived of their governments of Kairwan and Tangier; and the third son, who governed Spain in his father's absence, was beheaded, and his head sent to Muza. He died soon after in the greatest poverty, at Hedjaz.

MUZZLE, n. *mŭz'l* [F. *museau*, the muzzle—from OF. *musel*, the muzzle—from *muse*, a mouth: It. *muso*, the muzzle or snout of a beast: It. *musoliera*, a muzzle: F. *muselière*, a muzzle or provender-bag]: the projecting nose and mouth of an animal; a snout; a depreciatory term for the jaws and mouth; a fastening or cover for the mouth of a dog, etc., to prevent biting; the open end of a tube, as of a gun: V. to put a muzzle on, as a dog; to restrain from doing mischief. MUZZ'LING, imp. *-lĭng*. MUZZ'LED, pp. *-ld*, having the mouth fastened to prevent eating or biting.

MUZZY, a. *mŭz'zĭ* [Low Ger. *muddig*, muddy]: *familiarly*, bewildered; confused with drink: see MUDDLE.

M'WANGA: king of Uganda, Africa, succeeding, 1885, his father Mtesa. Irritated and alarmed by the visits of missionaries and explorers, he ordered a massacre of the foreigners in his dominions. Among the victims of this massacre were Bishop Hannington, Church of England missionary, and all but four of his party of 50 persons. M'Wanga was dethroned by an Arab force led by his brother Kalema. During his period of exile he professed conversion, and, by the aid of foreign and native Christians, was reinstated king 1889, Oct. 12. In a few weeks he was again deposed by his brother and the Arabs, but placing himself under British and German protection he was returned to the throne, his brother being killed and the Arabs dispersed. While nominally Roman Catholic, he adheres to many heathen customs. He has (1890) made various grants to the representatives of the British and German governments, by whom the affairs of his kingdom are largely controlled, and his power for evil is greatly curtailed.

MY, pron. *mī* [AS. *min*, my (see MINE)]: one of the possessive forms of the personal pron. I, the other being *mine*—*my* is properly used before a word beginning with a vowel or a consonant, and *mine* before a vowel only; in common usage *my* is put before the noun, but *mine* follows it, and usually stands alone, as, this is *my* coat, that coat is *mine*.

MYADÆ, n. plu. *mī'ă-dē*, or MYACIDÆ, n. plu. *mī-ăs'ĭ-dē* [Gr. *muax* or *mūăka*, the common edible mussel]: in *zool.*, a family of mollusks known as the gaping bivalves.

MYALGIA, n. *mī-ăl'jĭ-a* [Gr. *mus*, a muscle; *algos*, pain]: muscular pain; cramp. Forms of myalgia are soreness and stiffness produced by over-exertion.

MYCALE, *mĭk'a-lē:* Asia Minor, the classical name of the modern Samsun, a mountain of south Ionia, with the promontory of Cape Santa Maria opposite the island of Samos as its seaward termination.

MYCELIUM, n. *mī-sē'lĭ-ŭm,* MYCE'LIA, n. plu. *-lĭ-ă* [Gr. *mukēs,* a mushroom, a fungus], in Botany: development of vegetable life peculiar to *Fungi,* but apparently common to all the species of that order. The *spawn* of mushrooms is the mycelium. The mycelium appears to be a provision for the propagation of the plant where its spores may not reach, its extension in the soil or matrix in which it exists, and its preservation when circumstances are unfavorable to its further development. It consists of elongated filaments, simple or jointed, situated either within the matrix or upon its surface. It is often membranous or pulpy. The development of the fungus in its proper form seems to be ready to take place, in proper circumstances, from any part of the mycelium. Fungi often remain long in the state of mycelium, and many kinds of mycelium have been described as distinct species and formed into genera. Liquors in which the flocculent mycelium of a fungus is spreading are said to be *mothery.*

MYCENÆ, *mī-sē'nē:* very ancient city in the n. of Argolis, in the Peloponnesus, upon a craggy height. It is said to have been founded by Perseus, was the capital of Agamemnon's kingdom, and at that time the principal city in Greece. About B.C. 468, it was destroyed by the inhabitants of Argos, and never rose from its ruins to anything like its former prosperity. In Strabo's time its ruins only remained; these are still seen in the neighborhood of Kharvati, and are specimens of Cyclopean architecture. The most celebrated is the 'Gate of Lions,' chief entrance to the ancient Acropolis. Excavations prosecuted at Mycenæ by Dr. Henry Schliemann, brought to light, 1876, several ancient tombs, containing a large quantity of gold and silver ornaments, etc.

MYCE'TES: genus of South American monkey: see HOWLER.

MYCOLOGY, n. *mī-kŏl'ŏ-jĭ* [Gr. *mukēs,* a fungus; *logos,* a discourse]: the study of the fungi or mushrooms, or a description of them. MYCOL'OGIST, n. *-jĭst,* one versed in mycology. MYCOLOGIC, a. *mī'kō-lŏj'ĭk,* or MYCOLOGICAL, a. *-ĭkăl,* relating to.

MYDRIASIS, n. *mī-drī'a-sĭs* [Gr.]: dilatation. MYDRIATIC, n. *mī-drĭ-ăt'ĭk,* a medicine or agent which dilates the pupil of the eye, e.g., belladonna, atropine, stramonium, henbane—all derived from the nightshade order of plants: ADJ. dilating the pupil of the eye.

MYELITIS, n. *mī'ĕ-lī'tĭs* [Gr. *mučlŏs,* marrow, and *itis,* denoting inflammation]: inflammation of the substance of the spinal cord (see below). MYELOID TUMOR, *mī'ĕ-loyd* [Gr. *eidos,* likeness]: a marrow-like tumor.

MYELITIS, *mī-ĕl-ī′tĭs:* inflammation of the substance of the spinal cord; either acute or chronic, but the latter is by far the most common. The *chronic* form begins with a little uneasiness in the spine, somewhat disordered sensations in the extremities, and unusual fatigue after any slight exertion. After a short time paralytic symptoms appear, and slowly increase. The gait becomes uncertain and tottering, and at length the limbs fail to support the body. The paralysis finally attacks the bladder and rectum, and the evacuations are discharged involuntarily; and death takes place as the result of exhaustion, or occasionally of asphyxia, if the paralysis involves the chest. In the *acute* form there is much pain (especially in the spinal region), which usually ceases when paralysis supervenes. The other symptoms are the same as those of the chronic form, but they occur more rapidly and with greater severity, and death sometimes takes place in a few days. The most common causes of this disease are falls, blows, and strains from over-exertion; but sexual abuses and intemperate habits occasionally induce it. It may also result from other diseases of the spine (as caries), or may be propagated from inflammation of the corresponding tissue of the brain. The treatment, which is much the same as that of inflammation elsewhere, must be confided entirely to the medical practitioner. When confirmed paralysis has set in, there is little to hope for, but in the early stage the disease is often checked by judicious remedies.

MYELON, n. *mī′ĕl-ŏn* [Gr. *muĕlŏs*, marrow]: the spinal cord of vertebrates. MYELONAL, a. *mī′ĕl-ōn′ăl*, of or pertaining to the spinal marrow.

MYER, *mī′ėr*, ALBERT JAMES: 1827, Sep. 20—1880, Aug. 24; b. Newburgh, N.Y.: U. S. chief signal officer, first conductor of the weather-bureau, and jocularly known as "Old Probabilities." He graduated at Hobart Coll. 1847, and Buffalo Med. Coll. 1851; entered the U. S. army as surgeon, assigned to duty in Texas; devised an effective system of signalling with flags by day and torches by night. In 1860, July, he became major, and was made signal officer by special act of congress; served in the Army of the Potomac as chief signal officer in all the battles from Bull Run to Antietam; took charge 1863, Mar. 3, of the chief signal office at Washington, with rank of col.; introduced the study of military signals at U. S. Military Acad.; 1863, Dec., he was assigned to reconnaissance on the Mississippi river, and later became chief signal officer under Gen. Canby, who intrusted to him the arrangement of the terms of the surrender of Fort Gaines; was relieved of his command on the ground of failure of confirmation of his nomination, and his appointment revoked 1864, July 21, but was made brevet brig.-gen. 1865, Mar. 13. At leaving the army he settled in Buffalo, N.Y.; prepared a *Manual of Signals for the U. S. Army and Navy;* was reappointed chief signal officer and col. in the army 1866, July 28; received charge of *a*

weather-bureau established by act of cong. of 1870, Feb. 9. The first observations at 24 stations in the interior of the continent were made and reported 1870, Nov. 1, 7 :35 A. M.; first storm warning was telegraphed Nov. 8; a system of cautionary day and night signals for lake and ocean navigation established; also river reports and special reports for farmers. Publication of the daily International Bulletin was begun 1875, July 1; and 1878, July 1, a daily international chart took its place. Gen. M. represented U. S. meteorology at Vienna 1873, and at Rome 1879. He was promoted brig. gen. 1880, June 16. by special act of cong., in reward of his services. He died at Buffalo.

MYGALE, *mĭg'a-lē:* genus of spiders, type of a family

Mygale.

Mygalidæ. They have four pulmonary sacs and spiracles, four spinnerets, eight eyes, and hairy legs. They make silken nests in clefts of trees, rocks, etc., or in the ground, sometimes burrowing to a great depth, and very tortuously. To this genus belongs the bird-catching Spider (q.v.) of Surinam; but it seems now to be ascertained that several of the larger species frequently prey on small vertebrate animals. They do not take their prey by means of webs, but hunt for it and pounce upon it by surprise. They construct a silken dwelling for themselves in some sheltered retreat. Some of them make a curious lid to their nest or burrow. They envelop their eggs, which are numerous, in a kind of cocoon.

MYITIS, n. *mĭ-ī'tĭs* [Gr. *mus*, a muscle; *itis*, inflammation]: inflammation of a muscle: see MYOSITIS.

MYLABRIS, *mī-lā'brĭs:* genus of coleopterous insects, nearly allied to *Cantharis* (q.v.), and noticeable because of the use of some of the species as blistering flies. *M. cichorii* is thus used in China and India; and *M. Fuesselini*, native of s. Europe, is supposed to have been the blistering fly of the ancients.

MYLITTA, *mī-lĭt'ta* (perhaps corresponding to Heb. *Meyaledeth*, Genitrix, who causes to bear): female deity, apparently worshipped first among the Babylonians, who gradually spread her worship through Assyria and Persia. She was originally, like almost every other mythological deity, a cosmic symbol, and represented the female portion of the twofold principle through which—to pagan thought—all creation came into existence, and which alone, by its united active and passive powers, upholds it. Mylitta is to a certain degree the representative of Earth, the Mother, who conceives from the Sun, Bel or Baal. Mylitta and Baal together are considered the type of the 'Good.' Procreation thus being the basis of Mylitta's office in nature, the act itself became a kind of worship to Mylitta, and was hallowed through and for her. Thus it came to pass that every Babylonian woman had once in her life to give herself up to a stranger, and thereby considered her person consecrated to the great goddess. This sacrifice in later days gave rise to the proverbial Babylonian lewdness. Herodotus's account of this subject must, like some others of his stories, be received with great caution.

MYLO, prefix, *mī-lō-* [Gr. *mulē*, a mill]: connected with or resembling molar teeth.

MYLODON, n. *mī'lō-dŏn* [Gr. *mulē*, a mill; *odous* or *odonta*, a tooth]: genus of gigantic fossil sloths, so called from the flat grinding surfaces of the molar teeth. Its remains are found in the Pleistocene deposits of South America, associated with the *Megatherium* and allied genera. A complete skeleton, dug up at Buenos Ayres, measured 11 ft. from the forepart of the skull to the end of the tail. Although like the modern sloth in general structure and dentition, its immense size forbids us to suppose that it could have had the same arboreal habits.

MYNHEER, n. *mĭn-hēr'* [Dut.]: sir; my lord; the style of address among the Dutch; a Dutchman.

MYNIAS, *mĭn'ĭ-as*, accurately MIN'YAS: in Greek mythology, son of Chryses. He was king of Jolcos, and gave his name to the people called *Minyæ*. He built the city of Orchomenus, where rites (named after him) were celebrated in his honor. His three daughters, Clymene, Iris, and Alcithoë, according to Ovid—but Leuconoë, Leucippe, and Alcithoë, according to other authors—were changed into bats for having contemned the mysteries of Bacchus.

MYNPURI, or MAINPURI, *mīn-pô'rē:* town of British India, capital of a district in the Northwest Provinces; on the banks of a small affluent of the Ganges, 160 m. s.e. of Delhi. It is 620 ft. above sea-level, and is a favorite station for troops, as provisions and water are abundant and good. Mynpuri has a Jain temple. Pop. about 22,000.

MYO-, prefix, *mī-ō-* [Gr. *mus, muos,* a muscle, a mouse]: pertaining to or connected with the muscles: resembling a mouse; myomorphic.

MYOCARDITIS, n. *mī'ō-kâr-dī'tĭs* [Gr. *mus,* a muscle, *muos,* of a muscle; *kardĭă,* the heart]: inflammation of the muscular substance of the heart. MYODYNIA, n. *mī'ō-dĭn'ĭ-ă* [Gr. *odŭnē,* pain]: pain in the muscles; cramp; also termed 'myalgia' and 'myosalgia.'

MYOGRAPHY, n. *mī-ŏg'ră-fĭ* [Gr. *mus,* a muscle of the body, *muos,* of a muscle; *graphō,* I write]: an anatomical description of the muscles. MY'OGRAPH'ICAL, a. *-grăf'ĭ-kăl,* pertaining to. MYOGRAPHION, n. *mī-ō-grăf'-ĭ-on,* an apparatus for ascertaining the velocity of the nervous current; invented 1850, by A. Helmholtz. MYOG'-RAPHIST, n., one who is versed in myography.

MYOID, a. *mī'oyd* [Gr. *mus,* a muscle; *eidos,* resemblance]: composed of fibre cells or muscular fibres.

MYOLEMMA, n. *mī'ō-lĕm'mă* [Gr. *mus, mua,* a muscle; *lemma,* a husk or rind]: in *anat.,* a tubular sheath inclosing muscular fibre, consisting of transparent and apparently homogeneous membrane; sarcolemma.

MYOLOGY, n. *mī-ŏl'ŏ-jĭ* [Gr. *mus,* a muscle, *muos,* of a muscle; *logos,* a discourse]: the science of the muscles; myography. MY'OLOG'ICAL, a. *-lŏj'ĭ-kăl,* pertaining to. MYOL'OGIST, n. *-jĭst,* one versed in.

MYOMA, n. *mī-ō'mă* [Gr. *mus,* a muscle]: a fibrous tumor consisting of smooth muscular fibre.

MYOMANCY, n. *mī'ō-măn'sĭ* [Gr. *mus,* a mouse; *mantei'a,* divination]: a kind of divination by means of mice.

MYOPIA, n. *mī-ō'pĭ-ă* [Gr. *muō,* I shut the eyes; *ōps* or *ōpa,* the eye]: short or near sightedness. MY'OPE, n. *mī'ōp,* or MY'OPS, n. *-ōps,* a short-sighted person. MY-OP'IC, a. *mī-ŏp'ĭk,* short-sighted.

MYOSIN, n. *mī'ō-sĭn* [Gr. *muos,* of a muscle]: an albuminoid body extracted from muscular fibre.

MYOSITIS, n. *mī'ō-sī'tĭs* [Gr. *muos,* of a muscle, and *itis,* denoting inflammation]: inflammation of muscles.

MYOSOTIS, n. *mī'ō-sō'tĭs* [Gr. *muos,* of a mouse; *ous* or *ōtă,* an ear]: a very beautiful genus of flowering plants—so named from a fancied resemblance in the leaves to mouse-ears, from the hairiness of the leaves of some species, ord. *Boraginăceæ.* MYOSOTIS PALUSTRIS, *păl-ŭs'trĭs* [L. *pălŭstris,* marshy—from *pălus,* a marsh]: the Forget-me-not (q.v.).

MYOTOMY, n. *mī-ŏt'ŏ-mĭ* [Gr. *muos,* of a muscle; *tomē,* a cutting]: the division of a muscle in surgical operations; the anatomy of the muscles.

MYOXIDÆ, *mī-ŏks'ĭ-dē:* family of rodents, including the genus *Myoxis,* Dormouse (q.v.). They are sometimes included in the family SEIURIDÆ. See RODENTIA.

MYRCIA, *mėr′sĭ-a:* genus of trees of nat. order *Myrtaceæ*, to which belongs the WILD CLOVE or WILD CINNAMON of the W. Indies (*M. acris*), a handsome tree 20 or 30 ft. high. Its timber is very hard, red, and heavy. Its leaves have an aromatic cinnamon-like odor and an agreeable astringency, and are used in sauces. Its berries are round and as large as peas, have an aromatic smell and taste, and are used for culinary purposes.—The leaves, berries, and flower-buds of *M. pimentoides* have a hot taste and fragrant smell, and are also used for culinary purposes.

MYRIAD, n. *mĭr′ĭ-ăd* [Gr. *murias* or *muriada*, ten thousand in unity; *murĭos*, innumerable; *murioi*, ten thousand, a myriad]: the number of 10,000; any immense number; a countless number.

MYRIAGRAM, n. *mĭr′ĭ-ă-grăm* [F.—from Gr. *murĭoi*, ten thousand; F. *gramme*]: measure of weight, 10,000 grams, about 22 lbs. avoirdupois: see GRAM.

MYRIALITRE, n. *mĭr′ĭ-ă-lē′tr* [F.—from Gr. *murĭoi*, ten thousand; F. *litre*]: measure of capacity containing 10,000 litres, about 610,280 cubic inches: see LITRE.

MYRIAMÈTRE, n. *mĭr′ĭ-ă-mā′tr* [F—from Gr. *murĭoi*, ten thousand; F. *mètre*]: measure of length, 10,000 metres, equal to $6\frac{1}{2}$ miles nearly: see MÈTRE.

MYRIAPOD, n. *mĭr′ĭ-ă-pŏd*, MYR′IAP′ODA, n. plu. *-ăp′ŏ-dă* [Gr. *murĭos*, innumerable; *pous* or *poda*, a foot]: class of ringed animals, including centipedes and millepedes, having many feet; a class in the group *Arthropoda;* though by some recent writers placed rather as a subclass in the class *Tracheata* under the group *Arthropoda*. *Myriapoda* resemble *Annelida* in their lengthened form, and in the great number of equal, or nearly equal, segments of which the body is composed; but in most of their other characters they agree more nearly with Insects, among which they were ranked by earlier naturalists, and still are by some. They have a distinct head, but there is no distinction of the other segments, as in insects, into thorax and abdomen. They have simple or compound eyes; a few are destitute of eyes. They have antennæ like those of insects. The mouth is furnished with a complex masticating apparatus, in some resembling that of some insects in larval state, in others similar to that of crustaceans. Respiration is through minute pores or spiracles on each side along the entire length of the body, the air being distributed by innumerable ramifying air-tubes to all parts. In most parts of their internal organization the M. resemble insects; though a decided inferiority is exhibited, particularly in the less perfect concentration of the nervous system. The resemblance is greater to insects in their larval than in their perfect state. The body of the M. is protected by a hard *chitinous* covering. The number of segments is various, seldom fewer than 24; though in some of the higher genera they are consolidated together in

pairs, so that each pair, unless closely examined, might be considered as one segment bearing two pairs of feet. The legs of some of the lower kinds, as *Julus* (q.v.), are very numerous, and may be regarded as intermediate between the bristle-like appendages which serve many annelids as organs of locomotion, and the distinctly articulated legs of insects. In the higher M., as *Scolopendra*, the legs are much fewer, and articulated like those of insects. None of the M. have wings. Some of them feed on decaying organic matter, chiefly vegetable; those of higher organization are carnivorous. The M. do not undergo changes so great as those of insects, but emerge from the egg more similar to what they are ultimately to become; though some of them are at first quite destitute of feet; and, contrary to what takes place in insects, the body becomes more elongated as maturity is approached, the number of segments and of feet increasing.

The M. are divided into two orders: the lower, *Chilognatha* (*Julus*, etc.), having the body sub-cylindrical, the feet very numerous, the head rounded, the mandibles thick and strong; the higher, *Chilopoda* (*Scolopendra*, etc.), having the body flattened, the feet comparatively few, the head broad, the mandibles sharp and curved.

The M. are found in all parts of the world, in the ground, among moss, under stones, in the decaying bark of trees, in decaying roots, and in many similar situations. The largest species are tropical. They all are generally regarded with aversion. It is doubtful how far any of them are injurious to crops, though it is probable that they may accelerate rottenness already begun; but some (Centipedes) have a venomous and painful bite.

MYRI'CA: see CANDLEBERRY.

MYRICINE, n., or MYRICIN, n. *mĭr'ĭ-sĭn* [F. *myricine*—from L. *myrīca*; Gr. *murikē*, the tamarisk, a kind of shrub]: the portion of bee's-wax which is insoluble in alcohol; a medical substance obtained from the bark of the root of the wax myrtle or bayberry: see CANDLEBERRY.

MYRIORAMA, n. *mĭr'ĭ-ō-rā'mă* [Gr. *murĭos*, innumerable; *hor'ama*, a sight]: a picture consisting of movable pieces, and capable of forming an almost endless variety of scenes.

MYRISTIC ACID, *mĭr-ĭs′tĭk* [Gr. *murismos*, a besprinkling with perfumes—from *murīzō*, I perfume], ($C_{14}H_{28}O_2$): crystalline fatty acid, found in the seeds of the common nutmeg, *Myristica moschata*. It occurs as a glyceride in the form of white scales, melting at 128, 8° F., insoluble in water and ether, soluble in hot alcohol, in the nutmeg butter, cocoa-nut oil, etc. It has recently been found in small quantity among the products of the saponification of spermaceti and of the fatty matter of milk; hence this organic acid must be ranked among those common to the animal and vegetable kingdoms. MYRISTICA′CEÆ (see NUTMEG). MYRISTICIN, n. *mĭr-ĭs′tĭ-sĭn*, the volatile oil of nutmegs. MYRISTIN, n. *mĭr-ĭs′tĭn*, a crystalline fat of a silky lustre obtained from nutmegs.

MYRMECOPHAGA, n. *mẽr′mẽ-kŏf′ă-gă* [Gr. *murmēx* or *murmēka*, an ant; *phago*, I eat]: genus of edentate quadrupeds which feed on ants: see ANT-EATER.

MYRME′LION: see ANT-LION.

MYRMIDONS, n. plu. *mẽr′mĭ-dŏnz* [Gr. *murmĭdŏnēs*, the soldiers of Achilles at the siege of Troy]: rough partisans; a horde of soldiers or ruffians under a desperate or unprincipled leader. MYR′MIDO′NIAN, a. *-dō′nĭ-ăn*, pertaining to or resembling myrmidons.—Ancient legends concerning the M., a people in Thessaly, derive their name from Myrmidon, son of Jupiter: other legends give Ægina as their place of origin, and say that they were ants changed by Jupiter to men, and that they settled in Thessaly with Peleus, father of Achilles.

MYROBALAN, n. *mĭr-ŏb′ă-lăn* [L. *myrobalănum*, the fruit of a species of palm—from Gr. *muron*, ointment; *balănos*, an acorn]: astringent fruit of certain species of *Terminalia*, trees of nat. order *Combretaceæ*, natives of the mountains of India. The genus *Terminalia* has a deciduous bell-shaped calyx and no corolla; the fruit is a juiceless drupe. *T. Bellerica*, a species with alternate elliptical entire leaves, produces part of the myrobalans of commerce; but the fruits of other species often appear under the same name. Tonic, astringent, and also laxative properties have been ascribed to myrobalans; but though formerly in repute, they are now scarcely used in medicine. They are used by tanners and by dyers, and have become a very considerable article of export from India. They are dried, and resemble prunes in appearance. They give a durable yellow color with alum, and, with the addition of iron, an excellent black.—*Emblic myrobalans* are the fruit of *Emblica officinalis*, of nat. order *Euphorbiaceæ*, native of India. They are used in India as a tonic and astringent; also in tanning and in making ink.—There is a kind of plum called the *Myrobalan Plum:* see PLUM.

MYRONIC, a. *mĭr-ŏn′ĭk* [Gr. *mŭrŏn*, any odorous juice flowing from a plant—from *murō*, I drop or flow]: denoting an acid, one of the components of black mustard seed, existing in the seed as a potassium salt. MYROSIN n. *mĭr′ŏ-sĭn*, an albuminous ferment, likewise contained in the seeds.

MYRRH, n. *mėr* [L. *myrrha*; Gr. *murrha*; Heb. *Mur*]: aromatic gummy resin produced by *Balsamodendron* (q.v.) *myrrha*, a tree of nat. order *Amyridaceæ*, growing in Arabia, probably also in Abyssinia. The M. tree is small and scrubby, spiny, with whitish-gray bark, thinly scattered small leaves, each consisting of three obovate obtusely toothleted leaflets, and the fruit a smooth brown ovate drupe, somewhat larger than a pea. M. exudes from the bark in oily yellowish drops, which gradually thicken and finally become hard, the color at the same time becoming darker. M. has been known and valued from the most ancient times; it is mentioned as an article of commerce in Gen. xxxvii. 25, and was among the presents which Jacob sent to the Egyptian ruler, and among those which the wise men from the East brought to the infant Jesus. It was an ingredient in the 'holy anointing oil' of the Jews. M. appears in commerce either in tears and grains, or in pieces of irregular form and various sizes, yellow, red, or reddish brown. It is brittle, and has a waxy fracture, often exhibiting whitish veins. Its odor is balsamic, its taste aromatic and bitter. It is used in medicine as a tonic and stimulant, in disorders of the digestive organs, excessive secretions from the mucous membranes, etc., also to cleanse foul ulcers and promote their healing, and as a dentifrice, particularly in a spongy or ulcerated condition of the gums. It was much used by the ancient Egyptians in embalming. The best M. is known in commerce as *Turkey M.*, being brought from Turkish ports; as the name *E. Indian M.* is also given to M. brought to Europe from the E. Indies, though it is not produced there, but comes from Abyssinia. It is not known whether the M. tree of Abyssinia is the same as that of Arabia, or an allied species. MYRRHIC, a. *mėr'ĭk*, pert. to or obtained from myrrh. MYRRHIC ACID, a substance obtained from myrrh. MYRRHOL, n. *mėr'ol*, in *chem.*, essential oil of myrrh.

Myrrh (*Balsamodendron myrrha*).

MYRRHINE, a. *mėr'rĭn* [L. *myrrhĭnus*, of or from the stone *myrrha*]: made of murrhine-stone or fluor spar.

MYRRHOPHORE, n. *mėr'o-fōr* [lit. myrrh-bearer—from Gr. *murrha*, myrrh; *pherō*, I bear]: in *eccles. art*, one of the three Marys, myrrhophores who are represented as bearing vases of myrrh in their hands when visiting Christ's sepulchre at early dawn.

MYRSINACEÆ, *mėr-sĭn-ā'sē-ē:* natural order of exogenous plants, consisting of trees and shrubs, natives of warm climates, and having simple leathery leaves, destitute of stipules; hermaphrodite or unisexual flowers, generally small, but often in umbels, corymbs, or panicles; very similar in structure to the flowers of the *Primulaceæ;* the fruit generally fleshy, with 1–4 seeds. The flowers are very often marked with sunken dots or glandular lines.—There are more than 300 known species. Many are beautiful evergreen shrubs, particularly the genus *Ardisia.* Some have peppery fruit, as *Embelia ribes.*

MYRTACEÆ, *mėr-tā'sē-ē:* natural order of exogenous plants, consisting of trees and shrubs, natives chiefly of warm, but partly also of temperate, countries. The order, as defined by the greater number of botanists, includes several suborders, regarded by some as distinct orders, particularly CHAMÆLAUCIACEÆ (in which are contained about 50 known species, mostly beautiful little bushes, often with fragrant leaves, natives of New Holland), BARRINGTONIACEÆ (q.v.), and LECYTHIDACEÆ (q.v.). Even as restricted, by the separation of these, the order contains about 1,300 known species. The leaves are entire, usually with pellucid dots, and a vein running parallel to and near their margin.—Some of the species are gigantic trees, as the *Eucalypti* or *Gum Trees* of New Holland, and different species of *Metrosideros*, of which one is found as far south as Lord Auckland's Islands, lat. 50½°. The timber is generally compact.—Astringency seems a prevalent property in the order, and the leaves or other parts of some species are used in medicine as astringents and tonics. A fragrant or pungent volatile oil is often present in considerable quantity, of which *Oil of Cajeput* and *Oil of Cloves* are examples. *Cloves* and *Pimento* are among the best-known products of the order. The berries of several species are occasionally used as spices in the same way as the true Pimento. A considerable number yield pleasant edible fruits, among which are the POMEGRANATE, the GUAVA, species of the genus *Eugenia*, and some species of myrtle.

MYRTIFORM, a. *mėr'tĭ-fawrm* [L. *myrtus*, myrtle; *forma*, shape]: having the shape of myrtle leaves or berries.

MYRTLE, n. *mėr'tl* [OF. *myrtil*, a myrtle-berry—from L. *myrtus;* Gr. *murtos*, the myrtle]: a small fragrant evergreen plant; the *Myrtus communis*, or common myrtle (see below), ord. *Myrtăcĕæ.* MYRTACEOUS, a. *mėr-tā'shŭs*, of or relating to the myrtle or MYRTA'CEÆ, *-sē-ē* (q.v.). MYRTLE-BERRY, the fruit. MYRTLE-WAX, wax from a species of myrtle: see WAX.

MYR'TLE (*Myrtus*): genus of *Myrtaceæ*, having the limb of the calyx 4–5-parted, 4–5 petals, numerous free stamens, an almost globose germen, and a 2–3-celled berry, crowned with the limb of the calyx, and containing kidney-shaped seeds. The leaves are opposite and marked with pellucid dots; the flower-stalks are axillary, and generally one-flowered.—The COMMON M. (*M. communis*) is well known as a beautiful evergreen shrub, or a tree of moderate size, with white flowers. It is a native of all the countries around the Mediterranean Sea, and of temperate parts of Asia, often forming thickets, sometimes even within the reach of the sea spray. The leaves are ovate or lanceolate, varying much in breadth. They are astringent and aromatic, containing a volatile oil, and were used in medicine by the ancients as a stimulant. The berries also are aromatic, and are used in medicine in Greece and India.

Myrtle (*Myrtus communis*):
1, flower of Myrtle, cut vertically; 2, Myrtle in flower.

M. wine, called *Myrtidanum*, is made in Tuscany. M. bark is used for tanning in many parts of s. Europe. Among the ancient Greeks, the M. was sacred to Venus, a the symbol of youth and beauty, was much used in festivals, and was, as it still is, often mentioned in poetry.—The SMALL-LEAVED M. of Peru (*M. microphylla*) has red berries of the size of a pea, of pleasant flavor and sugary sweetness. Those of the LUMA (*M. luma*) also are palatable, and are eaten in Chili; as are those of the DOWNY M. (*M. tomentosa*), on the Neilgherry Hills, and those of the WHITE-BERRIED M. (*M. leucocarpa*), by some regarded as a variety of the Common M., in Greece and Syria

The berries of this species or variety are larger than those of the Common M., and have a pleasant taste and smell.—A very humble species of M. (*M. nummularia*) spreads over the ground in the Falkland Islands.

MYSELF, pron. *mī-sĕlf′* [*my*, and *self*] : emphatic form of the personal pronoun I, to which it is commonly added to render the pronoun *I* more emphatic, as *I myself.*

MYSIA, *mĭsh′ĭ-a :* ancient province in the n.w. of Asia Minor, bounded n. and w. by the Propontis and the Ægean Sea, s. by Lydia and Phrygia, n.e. by Bithynia. The n.w. corner of the province, between the Hellespont and the river Æsepus, is sometimes known apart from M., as the Troad. In the n. the chain of Olympus, 6,000 ft. high, separates M. from Bithynia; in the s. that of Temnus for some distance parts it from Lydia, and then passes through it to the Gulf of Adramyttium. The Rhyndacus river and its tributary, the Macestus, in the n. of M., take a widely diverging course from the Phrygian table-land to a union about 15 m. from the fall of their waters into the Propontis. The large Lake of Apollonia is a side-water of the Rhyndacus, and that of Miletopolis is similarly connected with the Macestus. The Caicus is the river of M. in the s., flowing from Mt. Temnus w. to the Ægean Sea. Pergamum and Cyzicus were chief cities of M. ; but round its entire coasts, n. and w., were a series of Greek towns, many of them important colonies. The natives of M. were akin to those of Lydia and Phrygia, and probably of Thracian origin. Only a slight relic of their language remains. They fell under the Lydian monarchy of Crœsus, then under the Persian empire, later that of Alexander, and B.C. 190 that of Rome, the province of 'Asia' embracing M. from B.C. 130.

MYSIS, *mī′sĭs :* genus of podophthalmous (stalk-eyed) crustaceans, of order *Stomapoda*, much resembling the common shrimps in form, though differing in the external position of the gills. They are often called *Opossum Shrimps*, because the last two feet are furnished with an appendage which in the female forms a large pouch, and in this the eggs are received after they leave the ovary, and are retained till the young acquire a form very similar to that of the parent, when the whole brood are at once set free into the ocean. Species of M. are found on the British shores, but they are far more abundant in the Arctic seas, where they form no small part of the food of whales and of many fishes, particularly of various species of salmon.

MYSORE, *mī-sōr′*, or MAISUR : native state of s. India, administered 1831–81 by the British govt. It is surrounded by districts of the Madras govt. The area is 25,000 sq. m. M. is an extensive table-land, with average elevation of about 2,000 ft., and with a slope principally toward the n. and n.e. The chief rivers are the Cauvery, flowing s.e., and the Tungabhadro, the Hugri, and the Penner, flowing n. and n.e. The climate of the higher

districts is during a great portion of the year healthful and pleasant. The annual value of the exports, consisting of betel-nut, coffee, cotton, cardamoms, rice, silk, and sugar, is more than $5,500,000. The imports, mainly of iron, gold, pepper, salt, and pulses, are more than $7,500,000. The ruinous misgovernment of the native prince led the British to assume the administration 1831; and it was entirely under their management till 1881, when it was restored to native govt. The famine years 1876–78 told with great severity on M. The chief town is Mysore; but the British headquarters were at Bangalore. For the history of M., see HYDER ALI: TIPPOO SAHIB: INDIA.—Pop. (1872) 5,055,412; (1881) 4,186,199; (1891) 4,943,604; (1901), 5,529,399.

MYSORE′, or MAISUR: city of India, cap. of the native state of M., chief town of a dist. It is amid picturesque scenery, on a declivity formed by two parallel ranges of elevated ground running n. and s.; 245 m. w.s.w. of Madras; lat. 12° 19′ n., long. 76° 42′ e. The houses are generally of teak, and among the chief edifices are the British residency and church. The fort is quadrangular in form, three of its sides 450 yards in length, and the remaining side longer. The rajah's palace, occupying three sides of the interior fort, contains a magnificent chair or throne of gold. The climate is mild, but not healthful; fevers are frequent. Carpets are manufactured. Pop. (1891) 74,048; (1901) 68,111.

MYSTAGOGUE, n. *mĭs′tă-gŏg* [Gr. *mustēs*, one initiated in mysteries; *agōgŏs*, a leader]: one who interprets mysteries: in the anc. Greek religion, the priest whose office it was to direct the preparations of the candidates for initiation in the several Mysteries (q.v.), as well as to conduct the ceremonial of initiation. It was sometimes applied by a sort of analogy to the class of professional *ciceroni*, who in ancient, as still in modern times, undertook to show to strangers newly arrived in a city the noteworthy objects which it contained; but the former meaning is its primitive one, and formed the ground of the application of the same name, in the Christian Church, to the catechists or other clergy who prepared candidates for the Christian *mysteries*, or sacraments, of baptism, confirmation, and the eucharist, especially the last. In this sense, the word is frequently used by the fathers of the 4th and 5th c. In the well-known lectures of St. Cyril of Jerusalem, though all were addressed to candidates for the mysteries, some for baptism, and some for the eucharist, it is only to the lectures addressed to the latter that the name *mystagogic* is applied. This distinction was connected with the well-known Discipline of the Secret; and it appears to have ceased with the abolition or gradual disuse of that discipline.—The term M. in the Rom. Cath. Chh. is now applied to one who has church relics in charge and shows them to other people. MYS′TAGOG′IC, or MYS′TAGOG′ICAL, a. *-gŏj′ĭ-kăl*, pert. to a mystagogue.—See SECRET, DISCIPLINE OF THE.

MYSTER, or MISTER, n. *mĭs'tĕr* [OF. *mestier*, a trade, a craft—from L. *mĭnistĕrĭŭm*, service, employment]: in *OE.*, a trade; an occupation; a handicraft: also MYSTERY, or MISTERY, n. in *OE.*, a trade; a craft; a handicraft. MYSTERY PLAY has, therefore, according to some, been so named because acted by craftsmen. *Note.*—There is great confusion between this entry and the succeeding one, though they are totally different words: see note under MYSTERY 1.

MYS'TERIES (called also *Teletai*, *Orgia*, or, in Latin, *Initia*): certain rights and ceremonies in ancient, chiefly Greek and Roman, religions, known to and practiced by none except congregations of certain initiated men and women, at appointed seasons and in strict seclusion. The origin and real purport of these M., which held an important place among the religious festivals of the classical period, and which, in their ever-changing nature, designate various phases of religious development in the antique world, are almost unknown. Indeed, the vague speculations of modern times on the subject sound like an echo of the manifold interpretations of the various acts of the M. given by the priests to the inquiring disciple—according to the lights of the former or the latter. Some investigators, themselves not entirely free from mystic influences (e.g., Creuzer and others), have held them to have been a kind of misty orb around a nucleus of pure light whose bright rays were too strong for the eyes of the multitude; that, in fact, they hid under an outward garb of mummery a certain portion of the real and eternal truth of religion, the knowledge of which had been derived from some primeval, possibly the Mosaic, revelation, if it could not be traced to certain (or uncertain) Egyptian, Indian, or generally Eastern sources. To this kind of hazy conjecture, the real and thorough investigations begun by Lobeck, and pursued by many competent scholars in our own day, have, or ought to have, put an end. There cannot be anything more alien to the whole spirit of Greek and Roman antiquity than a hiding of abstract truths and occult wisdom under rites and formulas, songs and dances; and, in fact, the M. were anything but exclusive, either with respect to sex, age, or rank, in point of initiation. It was only the speculative tendency of later times, when Polytheism was on the wane, that tried to symbolize and allegorize these obscure and partly imported ceremonies, the bulk of which had undoubtedly sprung from the midst of the Pelasgian tribes themselves in prehistoric times, and which were intended to represent and to celebrate certain natural phenomena in the visible creation. There is certainly no reason to deny that some more refined minds may at a very early period have endeavored to impart a higher sense to these wondrous performances; but these can be considered only as solitary instances. The very fact that in later days it was necessary to abolish the M. as public nuisances in Rome itself speaks volumes against the modern speculation concerning occult wisdom and

cated in those secret assemblies of men and women, unfortunate inheritors of pagan habits of thought and life.

The M., as such, consisted of purifications, sacrificial offerings, processions, songs, dances, dramatic performances, and the like. The mystic formulas (*Deiknumena*, *Dromnea*, *Legomena*, the latter including the Liturgis, etc.) were held deep secrets, and could be communicated to those only who had passed the last stage of preparation in the mystagogue's hand. The hold which the nightly secrecy of these meetings, together with their extraordinary worship, must naturally have taken on minds more fresh and childlike than our advanced ages can boast of, was increased by all the mechanical contrivances of the effects of light and sound which the priests could command. Mysterious voices were heard singing, whispering, and sighing all around, lights gleamed in manifold colors from above and below, figures appeared and disappeared; the mimic, the tonic, the plastic—all the arts, in fact, were taxed to their utmost to make these performances (the nearest approach to which, in modern days, is furnished by transformation-scenes, or sensation-dramas in general) as attractive to the people and as profitable to the priests as could be. As far as we have any knowledge of the plots of these M. as scenic representations, they generally brought the stories of the special gods or goddesses before the spectator—their births, sufferings, deaths, and resurrections. Many were the outward symbols used, of which such as the Phallus, the Thyrsus, Flower Baskets, Mystic Boxes, in connection with special deities, told more or less their own tale, though the meanings supplied by later ages, from the Neo-Platonists to our own day, are various and often amazing. The most important M. were, in historical times, those of Eleusis and the Thesmophorian, both representing—from different points of view—the rape of Proserpina and Ceres's search for her: the Thesmophorian mysteries being also in a manner connected with the Dionysian worship (see BACCHUS). There were also those of Zeus of Crete—derived from a very remote period—of Bacchus himself, of Cybele and Aphrodite—the two latter with reference to the Mystery of Propagation, but celebrated in diametrically opposed ways, the former culminating in the self-mutilation of the worshipper, the latter in prostitution; further, the M. of Orpheus, who in a certain degree was considered the founder of all M. Nor were the other gods and goddesses forgotten: Hera, Minerva, Diana, Hecate, even foreign gods like Mithras (q.v.), and the like, had their due secret solemnities all over the classical soil, and whithersoever Greek (and partly Roman) colonists took their Lares and Penates throughout the ancient world. The beginning of the reaction in the minds of thinking men, against this mostly gross and degenerated kind of veneration of natural powers and instincts, is marked by the period of the Hesiodic poems; and when, toward the end of the classical periods

the M. were no longer secret, but public orgies of the most shameless kind, their days were numbered. The most subtle metaphysicians, allegorize and symbolize as they might, failed in reviving them and in restoring to them whatever little dignity they may in the beginning have had. The M. were the sacraments of the old pagan religion—the inner rites in which, now with artistic beauty, now with sensual appeal, now with dark terrors, now with lurid glare, it centralized its influence on the minds of its adherents.

MYS'TERIES AND MIR'ACLE-PLAYS: dramas founded on the historical parts of the Old and New Testaments, and the lives of the saints; performed during the middle ages, first in churches, afterward in the streets on fixed or movable stages. Mysteries properly were taken from biblical and miracle-plays from legendary subjects, but this distinction in nomenclature was not always strictly observed. We have an extant specimen of the religious play of a date prior to the beginning of the middle ages in the *Christos Paschōn*, assigned, somewhat questionably, to Gregory Nazianzen, and written in 4th c. Greek. Next come six Latin plays on subjects connected with the lives of the saints, by Roswitha, nun of Gandersheim, in Saxony, which, though not very artistically constructed, possess considerable dramatic power and interest; they have been lately published at Paris, with a Fr. translation. The performers were at first the clergy and choristers, afterward any layman might participate. The earliest recorded performance of a miracle-play was in England. Matthew Paris relates that Geoffroy, afterward Abbot of St. Albans, while a secular, exhibited at Dunstable the miracle-play of *St. Catherine*, and borrowed copes from St. Albans to dress his characters. This must have been at the end of the 11th or beginning of the 12th c. Fitzstephen, in his *Life of Thomas à Becket*, 1183, describes with approval the representation in London of the sufferings of the saints and the miracles of the confessors. On the establishment of the Corpus Christi festival by Pope Urban IV. 1264, miracle-plays became one of its adjuncts, and every considerable town had a fraternity for their performance. Through the 15th and following centuries, they continued in full force in England, and are mentioned, sometimes approvingly, sometimes disapprovingly, by contemporary writers. Designed at first as a means of religious instruction for the people, they had long before the Reformation so far departed from their original character, as to be mixed in many instances with buffoonery and irreverence, intentional or unintentional, and to be the means of inducing contempt rather than respect for the church and religion. Remarkable collections exist of English mysteries and miracles of the 15th c., known as the Towneley M. (Surtees Soc., 1836), the Coventry M. (Shaks. Soc., 1841) the Chester Plays (Shaks. Soc., 1843), and the York Plays (Oxf. Clar. Press, 1885). The Towneley M. are full of the

burlesque element, and contain many curious illustrations of contemporary manners.

Out of the mysteries and miracle-plays sprang a third class of religious plays called *Moralities*, in which allegorical personifications of the Virtues and Vices were introduced as *dramatis personæ*. These personages at first took part in the play only as associated with the scriptural or legendary characters, but afterward entirely superseded them. The oldest known English compositions of this kind are of the time of Henry VI.; they are more elaborate and less interesting than the miracle-plays. Moralities continued in fashion till the time of Elizabeth, and were the immediate precursors of the regular drama.

Miracles and mysteries were as popular in France, Germany, Spain, and Italy as in England. A piece of the kind yet extant, composed in France in the 11th c., is entitled *Mystery of the Wise and Foolish Virgins*, and written partly in the Provençal dialect and partly in Latin. A celebrated fraternity, called the Confrérie de la Passion, founded in Paris 1350, had a monopoly for the performance of mysteries and miracle-plays, which were of such length that the exhibition of each occupied several days. A large number of the French mysteries of the 14th c. are extant. In the alpine districts of Germany, miracle-plays were composed and acted by the peasants: these peasant-plays had less regularity in their dramatic form, were often interspersed with songs and processions; and in their union of simplicity with high-wrought feeling were most characteristic of a people in whom both the religious and the dramatic element are so largely developed. In the early part of the 18th c., they began to partake of the burlesque which had brought miracle-plays into disrepute elsewhere.

It is a mistake to suppose that the hostility of the reformers was what suppressed these exhibitions. The fathers of the Reformation showed no unfriendly feeling toward them. Luther is reported to have said that they often did more good and produced more impression than sermons. The most direct encouragement was given to them by the founders of the Swedish Prot. Church, and by the earlier Lutheran bishops, Swedish and Danish. The authorship of one drama of the kind is assigned to Grotius. In England, the greatest check that they received was from the rise of the secular drama; yet they continued to be occasionally performed in the times of James I. and Charles I.; and it is well known that the first sketch of Milton's *Paradise Lost* was a sacred drama, where the opening speech was Satan's Address to the Sun. A degenerate relic of the miracle-play may yet be traced in some remote districts of England, where the story of St. George, the dragon, and Beelzebub, is rudely represented by the peasantry. Strange to say, it was in Rom. Cath. s. Germany, where these miracle-plays and mysteries had preserved most of their old religious

character, that the severest blow was levelled against them. Even there, they had begun to be tainted to a limited extent with the burlesque element, which had brought them into disrepute elsewhere. In 1779, a manifesto was issued by the Prince-abp. of Salzburg, condemning them, and prohibiting their performance, on the ground of their ludicrous mixture of the sacred and the profane, the frequent bad acting in the serious parts, the distraction of the lower orders from more edifying modes of instruction, and the scandal arising from the exposure of sacred subjects to the ridicule of freethinkers. This ecclesiastical denunciation was followed by vigorous measures on the part of the civil authorities in Austria and Bavaria. One exception was made to the general suppression. In 1633, the villagers of Oberammergau, in the Bavarian highlands, on the cessation of a plague which desolated the surrounding country, had vowed to perform every tenth year the Passion of Our Saviour, out of gratitude, and as a means of religious instruction; a vow which had ever since been regularly observed. The pleading of a deputation of Ammergau peasants with Max. Joseph of Bavaria saved their mystery from the general condemnation, on condition of everything that could offend good taste being expunged. It was then and afterward somewhat remodelled, and is perhaps the only mystery or miracle-play which has survived to the present day. The last performance of this Passion-play took place 1890. The inhabitants of this secluded village, long noted for skill in carving in wood and ivory, have a rare union of artistic cultivation with perfect simplicity. Their familiarity with sacred subjects is even beyond what is usual in the alpine part of Germany, and the spectacle seems still to be regarded with feelings much like those with which it was originally conceived. What would elsewhere appear impious, is to the alpine peasants devout and edifying. The personator of Christ considers his part an act of religious worship; he and the other principal performers are said to be selected for their holy life, and consecrated to their work with prayer. The players, about 500 in number, are exclusively the villagers, who, though they have no artistic instruction, except from the parish priest, act their parts with no little dramatic power, and a delicate appreciation of character. The New Testament narrative is strictly adhered to, the only legendary addition to it being the St. Veronica handkerchief. The acts alternate with *tableaux* from the Old Testament and choral odes. Many thousands of the peasantry are attracted by the spectacle from all parts of the Tyrol and Bavaria, among whom the same earnest and devout demeanor prevails as among the performers; and, recently, visitors of cultured taste have been attracted in considerable numbers from Gr. Britain and the United States. Plays of humbler description, from subjects in legendary or sacred history, are not unfrequently performed by the villagers around Inns-

bruck, which show some rude dramatic talent. See the work of Sepet and Leon Gautier; Leroy's *Etudes sur les Mystères;* and the ed. of the *Mystère de la Passion*, by G. Paris and Reynaud.

MYSTERY, n. *mĭsé'tr-ĭ* [L. *mystērĭŭm;* Gr. *mustērĭon*, a secret thing—from Gr. *mustēs*, one who is initiated; *muein*, to initiate into mysteries: It. *misterio:* F. *mystère*]: profound secret; something wholly unknown; something very obscure or incomprehensible; that which is kept secret for a time to be afterward revealed; something that can be known only by revelation: a miracle-play. MYS'TERIES, n. plu. *-ĭz*, among *anc. pagans*, secret rights and worship known only to the initiated (see above): in the *middle ages*, miracle-plays, a kind of rude drama of a religious character (see above). MYSTE'RIOUS, a. *-tē'rĭ-ŭs*, relating to or containing mystery; hid from the understanding; very obscure; incomprehensible, and calculated to excite curiosity or wonder. MYSTE'RIOUSLY, ad. *-lĭ*. MYSTE'RIOUSNESS, n. *-nĕs*, the quality of being mysterious. MYSTERY, or MYSTERY PLAYS, and MIRACLE PLAYS, a species of dramatic compositions having characters and scenes drawn from the Bible, which were performed in the middle ages; also representing the martyrdom of the saints. PASSION PLAYS represented the sufferings of Christ between the Last Supper and His death. MORALITY PLAYS, about the time of the Reformation, plays much in vogue, which represented the claims of morality over vice, and drew the characters chiefly from allegorical personages. (See MYSTERIES AND MIRACLE PLAYS). *Note.*—Max Müller says MYSTERY PLAY is a corruption of L. *ministĕrĭum*, a religious ministry or service, and had really nothing to do with *mystery;* thus *mystery play* is properly *minstery play*, as from *ministry.*—SYN. of 'mysterious': secret; obscure; dark; mystic; occult; unintelligible; enigmatical; cabalistic.

MYSTERY: see under MYSTER.

MYSTIC, a. *mĭs'tĭk*, or MYSTICAL, a. *mĭs'tĭ-kăl* [F. *mystique*—from Gr. *mustikos;* L. *mysticus*, of or belonging to secret rites or mysteries—from Gr. *mustēs;* L. *mysta*, a priest of the mysteries: It. *mistico*]: obscure; hidden; remote from human comprehension; emblematical; involving a secret meaning. MYS'TIC, n. one professing to have direct intercourse with the Spirit of God. MYSTICS, n. plu. *mĭs'tĭks*, those who profess a pure, sublime, and disinterested devotion, and who aspire toward a more direct intercourse with the Divine Being than can be obtained through revelation, not through the medium of the senses, but through the inward perception of the mind; those who sought direct revelation from God in a species of ecstasy, or through visions. MYS'TICALLY, ad. *-lĭ*. MYS'TICALNESS, n. *-nĕs*, quality of being mystical.

MYSTICE'TE: name sometimes applied to the Right Whale, or Greenland Whale: see WHALE.

MYSTICISM, n. *mĭs'tĭ-sĭzm:* religious and philosophical tenets of the mystics; obscurity of doctrine. The term is used with considerable vagueness, but implies that general tendency in religion to higher and more intimate communication with the Divine, which, in most religions, ancient and modern, certain individuals or classes have claimed or more humbly have sought. In the Platonic philosophy, and in eastern philosophical and religious systems, the human soul being regarded as in some way partaking of the divine nature, it is held to be the great end of life to free the soul from the embarrassment and mental darkness in which it is held by the material trammels of the body. In the pursuit of this end, two very opposite courses were adopted: the first, that of spiritual purification, partly by repressing the natural appetites and weakening the sensual impulses by corporeal austerities, partly by elevating the soul through intense contemplation and withdrawal from outward objects of sense; the other, that of regarding the soul as superior to the body, independent of its animal impulses, incapable, from its higher origin, of being affected by its outward actions, or sullied by contact with the corruption in which its lower nature might love to wallow. A similar element of mysticism, which, in truth, must form in some sense a constituent of every elevated religious system, is traceable in the early doctrinal history of Christianity; and the career of Christian mysticism also divides itself into the same twofold course. Among the early sects external to the church, we trace the first in the system of Tatian and of the Eucratites, while the second finds its parallel in the Syrian Gnostics, in Carpocrates, Bardisanes, and in one form at least of the Nicolaitic heresy. The language of the apostle Paul, Gal. ii. 20; II. Cor. xii. 2, and many expressions in the Apocalypse, may be taken as the exponents of Christian mysticism, the highest aspiration of which has ever been toward that state in which the Christian 'no longer liveth, but Christ liveth in him.' And though no regular scheme of mysticism can be found in the early Fathers, yet the writings of Hermas the Shepherd, the Epistles of St. Ignatius, the works of St. Clement of Alexandria, the Expositions of Origen, and above all, the Confessions of St. Augustine, abound with outpourings of the true spirit of Christian mysticism. It is curious that the first systematic exposition of its principles is said to be in the works of the pseudo-Dionysius the Areopagite; but it was not till the days of the Scholastics that it received its full development, when the mystic life was resolved into its three stages, viz., of Purification, of Illumination, and of Ecstatic Union with God and Absorption in Divine Contemplation. It was mainly on the explanation of this third stage that the great division of the mediæval mystic schools turned; some of them explaining the union with God in a pantheistic or

semipantheistic sense, thereby annihilating the individual will, and almost the personal action of man in the state of ecstasy; others, with St. Bernard, fully preserving both the individuality and the freedom of man, even in the highest spiritual communication with his Creator. Of the former, many, as the Hesychasts (q.v.) in the Greek Church, and the Brethren of the Free Spirit (q.v.) and the Beghards in the Latin, drew from these mystical doctrines the most revolting moral consequences; in others, as Tauler, Ruysbroek, Ekkart, the error does not seem to have gone beyond the sphere of speculation. The writings of Thomas à Kempis (q.v.), of St. Catharine of Siena, of St. John of the Cross, and of St. Teresa, may perhaps be taken as the most characteristic representations of the more modern form of the traditionary M., which has come down from the mystics of the middle ages. A frequent application of the term in recent Christian theology is to a method of dealing with divine truth, rather than to any set of doctrines. Modern Christian M. reverently accepts the revelations given from God in Holy Scripture, while it is characterized by a tendency to refrain from reducing them to a systematic expression in the forms of a human philosophy—holding them rather as profound and eternal verities whose characteristic appeal is primarily to a spiritual faith both for their acceptance and for their investigation. The term M. is now often applied to this tendency in theology, because of the seeming obscurity resulting from such lack of a hard logical frame-work; but this application of the term must be deemed more a criticism and a reproach than an accurate designation.

For the later history of M. in the Rom. Cath. Chh., see FÉNELON, Mme. GUYON: MOLINOS: QUIETISM. The most remarkable followers of the same or kindred doctrines in the Prot. communions are Jacob Böhme (q.v.), of Görlitz, Emmanuel Swedenborg (q.v.), and William Law (q.v.).

MYSTIFY, v. *mĭs'tĭ-fī* [F. *mystifier*, to mystify—from L. *mystĭcus*, hidden; *fīō*, I am made: Gr. *mustĭkos*, mystic]: to involve in mystery so as to mislead; to render obscure; to perplex purposely; to play upon the credulity of. MYS'TIFYING, imp. MYS'TIFIED, pp. *-fīd*. MYS'TIFICA'TION, n. *-fĭ-kā'shŭn* [F.—L.]: the act of rendering a thing mysterious or perplexing.

MYTH, n. *mĭth* [Gr. *muthos*, originally speech, word: but after the age of Pindar and Herodotus, an ancient saying, legend—Syn. with L. *fabula*, fable]: fanciful narrative, in some respects founded on real events; a creation of the imagination; poetic fiction; fable (see MYTHOLOGY). MYTHIC, a. *mĭth'ĭk*, or MYTHICAL, a. *mĭth'-ĭ-kăl*, relating to myths; fanciful; fabulous. MYTH'-ICALLY, ad. *-lĭ*.

MYTHOGRAPHER, n. *mĭth-ŏg'ră-fẽr* [Gr. *muthos*, a fable; *graphō*, I write]: a writer of fables.

MYTHOLOGY, n. *mĭth-ŏl′ŏ-jĭ* [Gr. *mutholŏgĭă*, a fabulous narration—from *muthos*, an ancient saying, a fable; *logos*, a word]: the collected body or system of legends and traditions of a people respecting their gods and other fabulous beings, usually connected with their earlier history; system of myths (see below): also, a treatise on myths. MYTHOLOGIC, a. *mĭth′ŏ-lŏj′ĭk*, or MYTH′OLOG′ICAL, a. *-lŏj′ĭ-kăl*, of or relating to mythology. MYTHOLOGIST, n. *mĭth-ŏl′ŏ-jĭst*, one versed in mythology. MYTH′OLOG′ICALLY, ad. *-lĭ*. MYTHOLOGIZE, v. *mĭth-ŏl′ŏ-jīz*, to explain the fabulous history of the heathen. MYTHOL′OGIZING, imp. MYTHOL′OGIZED, pp. *-jīzd*.

MYTHOL′OGY: system or body of ideas or fancies relative to the early periods of a people's existence, presented in historical form attractively setting forth their religious beliefs. A nation's M. is the organized body of its myths, and has for nucleus its earliest traditions and legends, for which there may reasonably be presumed some foundation, though often extremely slight, in facts. The element of reality, however, early begins to be lost in exaggeration and wild distortion. The tendency to such creation of myths seems inherent in every people; certainly there is no people so sunk into the brute as to be without them. A myth is not to be confounded with an allegory; the myth being an unconscious act of the popular mind at an early stage of society, the allegory a conscious act of the individual mind at any stage of social progress. The parables of the New Testament are allegorical; so are Æsop's Fables; no one mistakes them for histories; they are known to have been invented for a special didactic purpose, and so received. But the peculiarity of myths is, that they are not only conceived in the narrative form, but generally taken for real narrations by the people to whom they belong, so long at least as the people do not pass a certain stage of intellectual culture. Even myths of which the allegorical significance seems somewhat plain, such as the well-known Greek myth of Prometheus and Epimetheus, were received by the Greeks as facts of early tradition. Myths may be divided into several classes, of which the first and most important is the theological and moral. The oldest theology of all nations is in the form of myths; hence the great importance of mythological study, now universally recognized, for it is not occupied merely or mainly with strange fancies and marvellous fictions, invented for the sake of amusement, but contains the fundamental ideas belonging to the moral and religious nature of man as they have been embodied by the imaginative faculty of the most favored races. It is this dominance of the imagination, so characteristic of early stages of society, which gives to myth its peculiar dramatic expression, and stamps the popular creed of all nations with the character of a poetry of nature, of man, and of deity. From the very nature of the case, the myth-producing faculty exercises itself with exuberance only under the poly-

theistic form of religion; for there only does a sufficient number of celestial personages exist, whose attributes and actions may be exhibited in narrative form; there is nothing, however, to prevent even a monotheistic people from exhibiting certain great ideas of their faith in a narrative form, so as by prosaic minds to be taken for literal historical facts. But besides strictly theological myths, there are physical myths, i.e., fictions representing the most striking appearances and changes of external nature in the form of poetical history; in which view, the connection of legends about giants, chimeras, etc., with regions marked by peculiar volcanic phenomena, has been often remarked. It is difficult indeed, in polytheistic religions, to draw any strict line between physical and theological myths; as the divinity of all the operations of nature is the first postulate of polytheism, and every physical phenomenon becomes the manifestation of a god. Again, though it may appear a contradiction, there are historical myths—marvellous legends about persons, who may with probability be supposed to have actually existed. So intermingled, indeed, is fact with fable in early times, that there must always be a kind of debatable land between plain theological myth and recognized historical fact. This land is occupied by what are called the heroic myths; that is, legends about heroes, concerning whom it may often be doubted whether they are set forth as a sort of inferior, and more human-like gods, or only men of more than ordinary powers whom the popular imagination has elevated into demi-gods.

The scientific study of M. commenced with the ancient nations who produced it, specially with the acute and speculative Greeks. The great mass of the Greek people, indeed—of whom we have a characteristic type in the traveller Pausanias—accepted their oldest legends, in the mass, as divine and human facts; but so early as the time of Euripides, or even before his day in the case of the Sicilians, Epicharmus and Empedocles, we find that philosophers and poets had begun to identify Jove with the upper sky, Apollo with the sun, Juno with the nether atmosphere, and so forth; i.e., they had begun to interpret their M. as a theology and poetry of nature. This, indeed, may be regarded as the prevalent view among all the more reflective and philosophical heathens (who were not, like Xenophon, orthodox believers) from the age of Pericles, B. C., 450, to the establishment of Christianity. But there was an altogether opposite view, which arose at a later period, under less genial circumstances, and exercised no small influence both on Greek and on Roman writers. This view was prominently put forth first by Euhemerus, a Messenian, in the time of the first Ptolemies, B.C. 4th c., and consisted in the flat, prosaic assertion, that the gods, equally with the heroes, were orginally men, and all the tales about them only human facts sublimed and elevated by the imagination of pious devotees. This view seemed to

derive strong support from the known stories about the birth and death of the gods, specially of Jove in Crete; and the growing skeptical tendencies of the scientific school at Alexandria, were of course favorable to the promulgation of such views. The work of Euhemerus accordingly obtained wide circulation; and having been translated into Latin, went to nourish that crass form of religious skepticism which was one of the most notable symptoms of the decline of Roman genius at the time of the emperors. Historians, like Diodorus, gladly adopted an interpretation of the popular mythology which promised to swell their stores of material; the myths accordingly were coolly emptied of the poetic soul which inspired them, and the early traditions of the heroic ages were set forth as plain history, with a grave sobriety equally opposed to sound criticism, natural piety, and good taste.

In modern times, the Greek M. has again formed the basis of much speculation on the character of myths and the general laws of mythical interpretation. The first tendency of modern Christian scholars, following the track long before taken by the fathers, was to refer all Greek M. to a corruption of Old Testament doctrine and history. Of this system of interpreting myths, we have examples in Vossius, in the learned and fanciful works of Bryant and Faber, and very recently, though with more pious and poetic feeling, in Gladstone. But the Germans, who have taken the lead here, as in other regions of combined research and speculation, have long ago given up this ground as untenable, and have introduced the rational method of interpreting every system of myths, in the first place, according to the peculiar laws traceable in its own genius and growth. Ground was broken in this department by Heyne, whose views have been tested, corrected, and enlarged by a great number of learned, ingenious, and philosophical writers among his own countrymen, specially by Buttmann, Voss, Creuzer, Müller, Welcker, Gerhard, and Preller. The general tendency of the Germans is to start—as Wordsworth does in his *Excursion*, book iv.—from the position of a devout imaginative contemplation of nature, in which the myths originated, and to trace the working out of those ideas, in different places and at different times, with the most critical research, and the most vivid reconstruction. Though in this work they have set forth a large mass of ingenious nonsense and brilliant guess-work, there has not been wanting among them sober judgment and sound sense to counteract such extravagances. It may be noticed however, as characteristic of their over-speculative intellect, that they have a tendency to bring the sway of theological and physical symbols down into a region of what appears to be plain historical fact; so that Achilles becomes a water-god, Peleus, a mud-god, and the whole of the *Iliad*, according to Forchhammer, a poetical geology of Thessaly and the Troad! Going to the opposite extrem

from Euhemerus, they have denied the existence even of deified heroes; all the heroes of Greek tradition, according to Uschold, are only degraded gods; and generally in German writers, a preference of transcendental to simple and obvious explanations of myths is noticeable. Creuzer, some of whose views had been anticipated by Blackwell, in Scotland, especially is remarkable for the high ground of religious and philosophical conception on which he has placed the interpretation of myths; and he was also the first who directed attention to the oriental element in Greek mythology—not, indeed, with sufficient discrimination in many cases, but to the great enrichment of mythological material, and the enlargement of philosophical survey. In the most recent times, by uniting the excursive method of Creuzer with the correction supplied by the more critical method of O. Müller and his successors, the science of comparative mythology has been brought into existence; and specially the comparison of the earliest Greek mythology with the sacred legends of the Hindus, has been ably advocated by Max Müller in *Oxford Essays* (1856). In France, the views of Euhemerus were propounded by Banier (1739). Mythology has been very scantily cultivated by British scholars. Besides those above named, Payne Knight, Mackay, Grote in the first volumes of his history, and Keightley are the only names of note; and their works can in nowise compete in originality, research, discriminating criticism, or largeness of view, with the productions of the German school. The best for common purposes is Keightley; the most original, Payne Knight. Sir G. W. Cox, in his work on Aryan mythology has pushed the sanskritizing tendencies of Max Müller to an extreme which to most minds seems absurd. The labors of the modern anthropological school, e.g., Tylor and Lubbock, are of value; also those of Fiske and Dorman in America. For the special mythologies of India, Rome, Greece, etc., see the titles of the respective countries. See also BACCHUS; JUPITER; HERCULES; etc.

MYTHOPLASM, n. *mĭth'ŏ-plăzm* [Gr. *muthos*, a fable; *plasma*, image, figure]: a narration of mere fable.

MYTHOPŒIC, a. *mĭth'ŏ-pē'ĭk* [Gr. *muthos*, a myth; *poiein*, to make]: making or producing myths; giving rise to myths or mythical narratives.

MYTILE'NE, or MITYLE'NE (island). See LESBOS.

MYTILE'NE, or MITYLE'NE (city). See CASTRO.

MYTILOID, a. *mī'tĭl-oyd* [L. *mytĭlus*, the sea-mussel; Gr. *eidos*, appearance]: in *geol.*, applied to shells undetermined, but approaching in shape the common sea-mussel.

MYTILUS, n. *mī'tĭl-ŭs* [L. *mytĭlus*, the sea-mussel]: the mussel, a bivalve mollusk, used as food, ord. *Mytilidæ* (see MUSSEL).

MYXEDEMA: a chronic disease affecting chiefly young adults, women more frequently than men, due to atrophy or loss of function of the thyroid gland. Its most prominent symptom is a puffiness of the surface, chiefly of the face and extremities, caused by an infiltration into the subcutaneous tissues of a peculiar semifluid substance resembling mucus. The skin is dry and covered with scales and the hair is thin and brittle. The mind is at the same time affected, being sluggish in its action; the memory fails, and the disposition is apt to become irritable; this may result eventually in actual dementia. The disease is very slow in its course and is not in itself fatal, but its subjects are liable to suffer from pneumonia or some other infectious disease which may prove fatal. The condition is due to disease of the thyroid gland and the suppression of its internal secretion. A similar state is produced by the operative removal of the thyroid. When the disease is congenital or comes on in infancy it is known as *cretinism* (q.v.). The treatment, which is often brilliantly successful, consists in the continued administration of the raw thyroid gland of the sheep, of the same dried and powdered, or of an extract made from it by means of glycerin. Under this treatment the puffiness disappears, the skin becomes soft and natural in appearance, the hair grows again, and the mind resumes its normal functions. Care must be observed in the administration of the thyroid preparation, as in too large dose it acts injuriously upon the heart. The treatment must be continued through life, for the thyroid gland is usually hopelessly diseased and the failure of its secretion must be constantly supplied by artificial means.

MYXINE, *mĭks'ĭn-ē:* genus of cartilaginous fishes; see HAG (fish).

MYXOMA, n. *mĭks-ō'mă,* MYXOMATA, n. plu. *mĭks-ŏm'-ă-tă* [Gr. *muxa,* mucus, slimy substance]: a tumor composed of mucous tissue.

MYXOMYCETES, n. *mĭks'ŏ-mī-sē'tēz* [Gr. *muxa,* a slimy substance; *mukēs,* a fungus]: a group of Thallophytes without chlorophyl; organisms found in moist situations growing on decaying leaves, moss, rotten wood, and the like, and which spread over them in a net-work of naked protoplasmic filaments of a soft creamy consistence and yellowish color.

MYXOSPORES, a. *mĭks'ō-spōrz* [Gr. *muxa,* mucus; *spora,* a seed]: the spores formed in the sporangia of the myxomycetes. MYXOSPOROUS, a. *mĭks-ŏs'pŏr-ŭs,* having myxospores, or pertaining to them.

N

N, or n, *ĕn:* nasal consonant, 14th letter of the English alphabet; one of the nasal liquids of the lingual class. See LETTERS. Its Heb. (and Phen.) name *Nun,* signifies a *fish,* which its original form was probably meant to represent. N is interchangeable with L (q.v.) and M, as in *col*lect, *com*mingle, *con*fer; and in Ger. *boden,* compared with Eng. *bottom.* In Latin, this letter had a faint, uncertain sound at the end of words and in some other positions, especially before *s.* This accounts for words in *on* having lost the *n* in the nominative case, though retaining it in the oblique cases, as *homo, hominis;* and for Gr. names like *Platon* being written in Latin without the final *n.* The dull, muffled pronunciation of *n,* indicated by such words as *consul, censor, testamento,* being frequently spelled *cosul, cesor, testameto,* was the first stage of the modern Fr. nasal *n.* Before a guttural letter, *n* naturally assumes the sound of *ng,* as *bank.* The letter *n* is liable to be detached and joined to the succeeding word beginning with a vowel, particularly the *n* of *an,* as *an ewt* becomes *a newt; an eke-name* becomes *a nickname; an ingot* becomes *a nugget*—formerly *niggot,* etc.: *n* is sometimes dropped, as *auger* for *nauger; umpire* for *numpire; adder* for *nadder; orange* for *norange,* etc.

N-RAYS: a new form of radiation discovered by M. Blondlot. He uses the term N-rays to designate the new radiation, the name being suggested by the University of Nancy, where he conducted his experiments. One of the important properties of N-rays is that they can be reflected and refracted while they have penetrative powers similar to Röntgen rays. They do not, however, affect a photographic plate and are, of course, invisible. But when a screen has been devised which will render them visible, it will then be possible to obtain perspective images of hidden bodies, such as a diseased bone, and this will give these rays as great an advantage over the X-rays as the photograph has over the old black-and-white silhouette. Another fact connected with N-rays has been discovered by Blondlot, and since confirmed by Reubens, which may prove to be of great importance in another field of application. This is the fact that these rays enhance the luminosity of a glowing solid or

gas without increasing its temperature. The explanation of this effect has not yet been offered, but any means which will enable us to increase the luminosity of a body without increasing its temperature will be of importance in solving the problem of an efficient light.

NAB, v. *năb* [Dan. *nappe;* Sw. *nappa,* to snatch; Fin. *nappata,* to seize suddenly: Dut. *knappen,* to crack, to seize]: to catch or seize unexpectedly; to clap the hand down upon a thing—a low or slang word. NAB'BING, imp. NABBED, pp. *năbd.*

NA'BAL: in Biblical history, the name of an Israelite of the tribe of Judah. David, having afforded protection to Nabal and saved his flocks and herds, his property, and even his life when in danger, some time after sent to him to supply his troops with provisions. This Nabal refused; on which David, stung with the ingratitude of the man, vowed to take summary justice on the ungrateful Jew and exterminate his family; and taking with him 400 men, set out for the residence of the mercenary Hebrew. Abigail, Nabal's wife, hearing of her husband's conduct and David's resolve, collected such provisions as the army required, and, attended by a train of servants, set out to meet the approaching king. Her beautiful person, combined with the excuses she made for her husband's conduct, so softened the heart of David, that he accepted her gifts, averted his wrath, and Nabal having been 'smitten by the Lord' a few days after, David married his widow.

NABATÆANS: Semitic people that once were powerful in central Arabia, having conquered the land of Edom, with a territory that extended from Damascus on the n. to Hegra (Al-Hajr) on the s., with the Sinaitic peninsula. Petra was their capital—the Selah of the Old Testament (2 Kings xiv. 7). During the Maccabean struggle they had relations with the sons of Mattathias (1 Macc. v. 25, ix. 35). Numerous Nabatæan inscriptions have come to light, written in Aramaic, but of little historical value. The Nabatæans were once prominent in commerce, especially in the 1st c. B.C., chiefly through caravans. They developed a coinage for their foreign trade, their coins bearing the names of their rulers; but in the reign of Augustus, became tributary to Rome, furnishing aids to Titus during the siege of Jerusalem. Trajan brought the Nabatæan kingdom to an end. See G. A. Cooke, *North Semitic Inscriptions* (1903); Mommsen, *Provinces of the Roman Empire* (1887).

NABAYUGAN: a tribe of the Philippines living in the province of Cagayàn, Luzon, west of Malanec. They are a warlike, head-hunting people, of Malay origin.

NABLOCKS, n. plu. *năb'lŏks:* the name applied to rounded or nodular masses, like the flints in chalk, or the balls of ironstone in the Coal-measures.

NABOB, n. *nā′bŏb* [Hind. *nawwâb*, a deputy, title of a governor; properly the plu. of *nâïb*]: title of the administrators, under the old Mogul empire, of the separate provinces into which the dist. of a *Sûbahdâr* (q.v.) was divided. The title was continued under the British rule, but it gradually came to be applied generally to natives who were men of wealth and consideration. In Britain and other western countries, it is applied colloquially to those who, having made great fortunes in the Indies, return to their native country, where they live in oriental splendor.

NABONASSAR, *năb-o-năs′ėr*, ERA OF: starting-point of Babylonian chronology; adopted by the Greeks of Alexandria, Berosus, and others. It began with the accession of Nabonassar to the throne—an event calculated (from certain astronomical phenomena recorded by Ptolemy) to have taken place B.C. 747, Feb. 26.

NABULUS′, or NÂBLUS′ (corruption of the Gr. *Neapolis*, New City, the name given to it in the reign of Vespasian); anciently called SHECHEM or SICHEM; in the N. Test. (Jn. iv. 5), SYCHAR: town of Palestine, possessing, it is said, 'the only beautiful site from Dan to Beersheba.' It lies between Mount Ebal and Mount Gerizim, on the s. side of the valley of Erd-Mûkhna. The houses are moderately good, but the streets (as usual in the East) are narrow, gloomy, and filthy. The chief productions are soap, cotton, and oil—the soap-manufactories are large, and the oil is considered the best in Syria. Pop. variously estimated 8,000 to 14,000; of whom about 500 are Christians, 150 Samaritans, and 50 Jews; the rest are Mohammedans, fierce, turbulent, and fanatical.—See Porter's *Handbook for Syria and Palestine*, and Stanley's *Palestine*.

NACH, or NAUTCH, n. *nawch* [Skr.]: a dance in India, performed by girls or women; an entertainment given by rich Hindus. NAUTCH-WALI or -WALEE, *-wâl-ē′* [Ar. *wali*, a servant]: a dancing-girl. The 'N. girls' are regularly trained for public dancing; and are numerous, as their dance is in great request for festive occasions.

NACHLAVT, n. *nâċh′lowt* [Ger. after-sound; *nach*, after; *laut*, sound]: in *philol.*, the second element in a diphthong, or in a diphthongal sound.

NACHT-HORN, n. *nâċht′hawrn* [Ger. night-horn]: an organ stop consisting of stopped wood pipes of a moderately large scale, the tone of which is somewhat like that of a horn.

NACRE, n. *nā′kr* [F. *nacre*, mother-of-pearl: Sp. *nacar*: Pers. *nakar*]: the beautiful iridescent substance forming the inner covering of shells; mother-of-pearl. NACREOUS, a. *nā′krē-ŭs*, having a pearly lustre. NACRITE, n. *nā′krīt*, a mineral of the mica family, consisting of minute grains or scales, having a pearly lustre. See MOTHER OF PEARL.

NADAB, n. *nā′dăb* [Pers.]: the high priest of the Persians.

NA'DAL, Bernard Harrison, D.D.: 1812, Mar. 27–1870, June 20; b. in Talbot co., Md.: Meth. Episc. clergyman. He was admitted 1835 to the old Baltimore conference; labored in Md., Va., Penn., Brooklyn, N. Y., and New Haven, Conn.; graduated at Dickinson Coll. 1848, during his service at Carlisle, Penn.; prof. at Asbury Univ., Indiana, 1854–57; chaplain of house of representatives at Washington one session. At the organization of Drew Theol. Sem., he became prof. of church history; and at the death of Dr. McClintock, acting pres. until his death. He was an editor of *The Methodist;* published in *Meth. Quart. Review*, 1854–57, *Essays upon Church History;* strongly opposed and frequently spoke against slavery, and used great influence, through sermons and addresses, in support of the war for the Union. Prof. Henry A. Buttz published 1873 a vol. of his sermons, *New Life Dawning*, with a memoir.

NADIR, n. *nā'dir* [Ar. *nadhĭr*, opposite: It. and F. *nadir*]: that point in the heavens which is diametrically opposite to the zenith, so that the zenith, nadir, and centre of the earth are in one straight line. The N. is, to any observer, the point directly beneath his feet. The Zenith (q.v.) and N. form the poles of the Horizon (q.v.).

NADIR SHAH, *nâ'dĕr shâh*, Ruler of Persia: 1688–1747, June 20 (ruled 1736–47); b. near Kelat, in the centre of Khorassan, Persia; of the Afshars, a Turkish tribe. When 17 years old, he was taken prisoner by the Usbeks, but escaped after four years; entered the service of the gov. of Khorassan, and soon obtained high promotion. Having, however, been degraded and punished for some real or supposed offense, he betook himself to a lawless life, and for several years was the daring leader of a band of 3,000 robbers who levied contributions from almost the whole of Khorassan. N. seized the town of Kelat, and gradually extended his territorial authority. Persia was at this time ruled by Melek Ashraf, an Afghan of the tribe of Ghilji, whose grinding tyranny and cruelty produced in the mind of every Persian a deadly hatred of the very name Afghan, which exists to the present day. N. having avowed his intention of expelling the hated race from the country, and restoring the Suffavean dynasty, numbers flocked to his standard, and Meshed, Herat, and all Khorassan were speedily reduced. Ashraf, signally defeated in several engagements, fled before the avenging N., who quickly purged the provinces of Irak, Fars, and Kerman of even the semblance of Afghan domination. The assassination of Ashraf, during his retreat, terminated the war. The rightful heir, Tamasp, then ascended the throne, and N. received for his services the govt. of the provinces of Khorassan, Mazanderan, Seistan, and Kerman, assuming at the same time the title of Tamasp-kûli (Slave of Tamasp), the title of khan being subsequently added. He was sent against the Turks 1731, and defeated them at Hamadan, regaining the Armenian provinces which had been seized by

the Turks in the preceding reign; but his sovereign having in his absence engaged unsuccessfully the same enemy, Nadir caused him to be put in prison, and elevated his infant son, Abbas III., to the throne 1732. The death of this puppet, 1736, opened the way for the elevation of Nadir himself, who was crowned as *Nadir Shah* 1736, Feb. 26. He resumed the war with the Turks; and, though totally defeated in the first two battles by the Grand Vizier Asman, turned the tide of fortune in the subsequent campaign, and granted peace to the Turks on condition of receiving Georgia. He also conquered Afghanistan, and drove back the invading Usbeks. His ambassador to the Great Mogul having been murdered with all his suite at Jeladabad, and satisfaction having been refused, Nadir in revenge ravaged the Northwest Provinces, and took Delhi, which, because of the insane behavior of the inhabitants, he gave up to pillage. With booty to the amount of $100,000,000, including the Koh-i-nûr (q.v.) diamond, he returned to the western bank of the Indus. He next reduced Bokhara and Khaurezm, restoring to Persia her limits under the golden reign of the Sassanides. From this period, his character underwent a sudden change: he had been open-hearted, liberal, and tolerant; he now became suspicious, avaricious, and tyrannical. The empire groaned under his extortions, and he was finally assassinated. His only surviving son was carried to Constantinople, and thence to Vienna, where he was brought up as a Roman Catholic, under the surveillance of Empress Maria Theresa, and died a major in the Austrian service, under the title of Baron Semlin. Nadir's later tyranny has now been forgotten by the Persians, and at the present day he is regarded with pride and gratitude as the 'Wallace' of Persia.

NAEGELE, Charles Frederick: American painter: b. Knoxville, Tenn., 1857, May 8. He studied figure and portrait painting under C. Myles Collier, William Sartain, and William M. Chase in New York. He has received many awards in competitive exhibitions and has painted portraits of Peter Cooper, Charles L. Tiffany, ex-Governor Roswell P. Flower, Gen. Joseph D. Bryant, Gen. Edwin A. McAlpin, John W. Gates, William Woodward, Jr., Franklin V. Edson, and Waldo Hutchins.

NÆVIUS, *nē'vĭ-ŭs*, Gnæus, *nē'ŭs:* one of the earliest Latin poets: b. (it is conjectured) about B.C. 265; d. some time after B.C. 204. In his youth, he served in the first Punic war; but about B.C. 235 he made his appearance at Rome as a dramatic writer. Of his life, we know little; but of his character, rather more. He was very decidedly attached to the plebeian party, and in his plays satirized and lampooned the Roman nobles with all the virulence and indiscretion of a hot-blooded impetuous Campanian—that Gascon of ancient Italy. His rashness

ultimately caused his banishment to Utica in Africa, where he died 204 or 202 B.C. Nævius was a man of vigor, and a poet of original force: he has been termed 'second (in time) among the creators of Latin literature.' Besides his dramatic writings, comprising both tragedies and comedies, he wrote an epic poem, *De Bello Punico,* in the old Saturnian meter. Of these, only a few very unimportant fragments are extant, which may be found in editions by Vahlen (1854), Klussmann (1843), and Ribbeck (*Fragmenta Scenicæ Romanorum Poesis,* 2d. ed. 1873). See also Sellar's *Poets of the Roman Republic,* and Simcox's *History of Latin Literature* (1882).

NÆVUS, n. *nē'vŭs* [L. *nævus,* a mole on the body]: permanent natural spot or mark on the skin at birth; a birthmark. NÆVOSE, a. *nē'vōs,* freckled; having congenital marks. NÆVOID, a. *nē'voyd* [Gr. *eidos,* resemblance]: resembling a nævus.—*Nævus* (known popularly as *mother-spot* or *strawberry mark*) is a congenital mark or growth on a part of the skin. Sometimes it is merely a dark discoloration of the surface (see MACULA), in which case it is termed a mole. It may be flat, being merely a red stain of the skin, or it may consist of a dense network of dilated blood-vessels, forming a reddish or livid tumor, more or less elevated above the surface of the surrounding skin. The most frequent situations of these vascular nævi are the skin and subcutaneous cellular tissues of the head; but they may occur elsewhere. Sometimes these tumors waste away spontaneously, and give no trouble; but they may increase rapidly, invade the adjacent tissues, and ulcerate or slough, and thus become dangerous to life by hemorrhage. When they do not show a tendency to increase, no treatment is necessary. When they are obviously increasing in size, the continual application of cold (by means of freezing mixtures), with moderately firm pressure, is sometimes of service; but a more certain method is to employ means to produce such an amount of inflammation as to obliterate the vessels; for this purpose, the seton, the application of nitric acid, and vaccination of the tumor have been successfully applied. The injection of strong astringents, with the view of coagulating the blood has sometimes effected a cure. If all those means fail, extirpation, either with the ligature or knife, must be resorted to; the ligature being regarded as the safest and best method. The X-ray has also been used with benefit in the treatment of flat nævi.

NÄFE'LS, *nā'fĕlss:* village of Switzerland (pop. 3,000), canton of Glarus, 5 m. n. of the town of Glarus, in a deep valley. It is one of the most famous battlefields in the country. Here, 1,500 men of Glarus, under Matthias am Buhl, in 1388, overthrew an Austrian force of 6,000 to 8,000 men. The event is still celebrated.

NAF'TIA, Lago: curious small lake in Sicily, about two m. from Mineo, in Catania. It is in a plain, amid craggy hills, and is circular, usually 60 or 70 yards in diameter, and about 15 ft. deep, but in dry weather shrinking to a much smaller size, and occasionally dried up. In the midst of it are three small craters, two of which perpetually send up water in jets to the height of two or three ft.; the third is intermittent. The water is greenish, or turbid, and has an odor of bitumen. The whole lake resembles a boiling caldron, from the escape of carbonic-acid gas, rushing upward with great force. The atmosphere is consequently fatal to birds attempting to fly across the surface of the lake, and to small animals which approach it to satisfy their thirst; and an approach to it is attended with headache and other painful effects on man himself. The ancients regarded these phenomena with great dread. They supposed that Pluto, when carrying off Proserpine, drove his fiery steeds through this lake, ere his descent to the lower regions. A temple was erected here to the gods of the two craters, the *Dii Palici*, supposed to be twin sons of Jupiter by the nymph Thalia. Pilgrims flocked to this shrine; and it afforded an inviolable asylum to slaves who had fled from their masters. An oath by the Dii Palici was never broken by the master, who found himself compelled here to come to terms with his runaway slave. No remains of the temple are left.

NAG, n. *năg* [Dan. *ög*, a horse: Dut. and Fris. *negghe*, a little horse: Swiss, *noggeli*, a dumpy woman: Icel. *nabbi;* OF. *nabe*, a dwarf]: a small useful horse; a pony; a horse; in *OE.*, a paramour. *Note.*—A probable derivation of *nag* may be found in the corruption of *a hack* into *a nag:* Gael. *each*, a horse; the Dan. *an og* becomes *a nog.*

NAG, v. *năg* [Norw. and Sw. *nagga*, to gnaw, to irritate: Icel. *naga*, to gnaw]: to scold and keep it up. Nag'ging, imp.: Adj. applied to a slight but constant pain; scolding and keeping it up. Nagged, pp. *năgd* Nag'gy, a. *-gĭ*, touchy; irritable.

NAGA, *nâ'ga:* in Hindu myth., the name of deified serpents, represented as sons of the Muni Kas'yapa and his wife Kadrû, whence they are called also Kâdraveyas. Their king is S'esha, the sacred serpent of Vishn'u.

NAGA, n. *nâ'ga*, or Nag, *nâg* [Mahratta, *naga;* Hind. *nag*]: term applied to an ancient race who invaded India about the 6th c. B.C.; applied also to a number of tribes living on the borders of Assam, Munnipoor, and Burmah; a member of one of the Naga tribes: a class of mendicants in Hindustan, going naked and carrying arms.

NAGAPATAM, *nag-a-pa-tâm':* seaport of Brit. India, on the Coromandel coast, province of Tanjur, 15 m. s. of Karikal. It was taken by the Dutch 1660, but fell into the hands of the English 1781. Its site is an open, sandy plain, elevated only three or four ft. above the sea-level. The port is visited by small vessels, and has some trade with Ceylon. Pop. (1881) 53,855; (1891) 59,221.

NAGARJU'NA, or **NAGASE'NA**: one of the most celebrated Buddhistic teachers or patriarchs—the 13th—who, according to some, lived about 400 years, according to others, about 500 years, after the death of the Buddha S'âkyamuni (i.e., B.C. 143 or 43). He was founder of the Mâdhyamika school, and his principal disciples were Aryadeva and Budhapâlita. According to the tradition of the Buddhas, he was born in s. India, of a Brahmanical family. Even as a child, he studied all the four Vedas; later, he travelled through various countries, and became proficient in astronomy, geography, and magical arts. By means of the last, he had several amorous adventures, which ended in the death of three companions of his, but in his own repentance, and, with the assistance of a Buddhist mendicant, in his conversion to Buddhism. Many miracles are, of course, attributed to his career as propagator of this doctrine, especially in s. India, and his life is said to have lasted 300 years.—See E. Burnouf, *Introduction à l'Histoire du Buddhisme Indien* (Paris 1844); Spence Hardy, *A Manual of Buddhism* (Lond. 1853); W. Wassiljew, *Der Buddhismus* (1860); and the works of Oldenberg (1881), and Rhys Davids.

NAGASAKI, *nâ-ga-sâ'kē*, **or NANGASIKI**, *nân-ga-sē'kē*: city, chief seaport on the w. coasts of Japan, one of the ports which the treaty of 1858 opened to foreign commerce 1859, July 1; on the w. side of a peninsula in the n.w. of the island of Kiusiu; 32° 44′ n. lat., 129° 51′ e. long. Previously to 1859, it was the only port in Japan open to foreigners. The harbor, one of the most beautiful in the world, is about six m. in width, and three or four in length. Within, it appears completely land-locked, and it is surrounded by hills about 1,500 ft. in height. These are broken into long ridges and deep valleys; while the more fertile spots are terraced and under cultivation. The town of N., about a mile in length, and three-quarters of a mile in width, lies on the n. side of the bay. The streets in general are clean and well paved, but the houses are not well built, except those possessed by courtesans and known as 'tea-houses.' On the hills behind the town are various temples—those dedicated to 'Sinto,' or the worship of the sun goddess, the old national religion of Japan, and those in which the Buddhistic worship, imported from China, is followed. The foreign settlement lies s. of the native town, the British, French, German, Prussian, and Portuguese consulates occupying the hilly ground back from the bay. On the opposite side of the bay, the Japanese have a steam-factory, under the direction of Dutch officers, and close by is the Russian settlement. The climate of N. is genial, but variable. The trade of N. is inferior to that of Kanagawa. Sea-weed, salt-fish, and other articles are exported to China. The brewing of rice-beer is one of the principal industries. The exports to Europe and Amer. are mainly tea, tobacco, coal, gingseng, vegetable wax,

and copper. The chief imports are cotton piece-goods, woolen goods, sugar, oils. The import trade suffers from the absence of wealthy native merchants and from lack of banking facilities. In 1879 the great new dock of N., the largest in Japan, was put in use. It is 460 ft. long by 89 broad and 28 deep, and has, as was expected, done much to promote trade. Pop. (1891) 58,142; (1898) 107,422.

NAGELFLUE, *nâ'gĕl-flô:* the provincial name for a bed of conglomerate belonging to the Molasse (q.v.), which forms a considerable portion of the strata in the central region of Switzerland, between the Alps and the Jura. It is said to attain the enormous thickness of 6,000 and 8,000 feet in the Rhigi near Lucerne, and in the Speer near Wesen.

NAGINA: see NUGGINA.

NAGKESUR: the name under which the blossoms of the *Mesua ferrea* are sold in the bazars of India. See GUTTIFERÆ.

NAGOYA, *nâ-goy'â:* city of Japan, province of Owari, on a great plain a few m. n. of the head of Owari Bay, in the s.e. of the main island of Japan. It is the seat of the Aichi-ken, or prefecture; is regularly laid out and well built; is a great centre of population, numbering (1898) 244,145; has many temples and monasteries of the old religion, and a castle, built 1610, one of the finest of the old strongholds still standing intact. Two of the towers of the castle are ornamented with huge images of rampant fish made of copper and covered with plates of solid gold. There is a govt. college and a telegraph station, indicative of recent changes in Japan. The great high-road called Tôkaidô passes through N., bringing much inland trade, which is carried on with pack-horses and the long narrow carts of the country. At the seaport of Miya, a few miles s. of N., many steamers and junks promote a large trade. In the numerous factories of N., porcelain, faïence, cloison-ware, fans, carvings, and lacquer-work are made, chiefly for export. The art of enamelling on porcelain in cloisons of metal threads originated here 1872.

NAGPUR, *nâg-pôr':* extensive division of Brit. India, under the chief commissioner of the Central Provinces; 24,040 sq. m. The n. part of the division is mountainous, traversed by spurs of the great Vindhya range; the general slope of the surface is from n.w. to s.e., and the Bay of Bengal receives the drainage of the country chiefly through the rivers Máhanadí and Wain Gangá—the latter a tributary of the Godávarí. The climate is not healthful, especially in the extensive tracts of low marshy land. The Gonds (see INDIA), supposed to be the aborigines, are the most remarkable class of the inhabitants. They rear fowls, swine, and buffaloes; but their country, forming the s.e. tracts—about one-third of the whole—is covered with dense jungle, swarming with tigers. In the more favored districts, where the

inhabitants are more industrious, rice, maize, oil, and other seeds, and vegetables are extensively cultivated. The rajahs of N., sometimes called the rajahs of Berar, ruled over a state formed out of a part of the great Mahratta kingdom. The dynasty, however, died out 1853, and the territory came into the possession of the British. Cap., Nagpur. Pop. of div. (1891) 2,982,480. The *District* of N. 3,786 sq. m., had pop. (1891) 757,862.

NAGPUR′: city of Brit. India, cap. of the dist. of N., and situated near its n.w. extremity, in an unhealthful swampy hollow, 430 m. e.n.e. of Bombay. Inclusive of its extensive suburbs, it is seven m. in circumference. It contains no important edifices. The great body of the inhabitants live in thatched mud-tents, interspersed with trees, which prevent the circulation of air, and secrete moisture, thus rendering the town needlessly unhealthful. The mean temperature of N. is estimated at about 80° F. Cotton cloths, coarse and fine chintzes, turbans, silks, brocades, blankets, woolens, tent-cloths, and articles in copper and brass, are manufactured. Here, 1817, Nov. 26, 27, a small British force of 1,350 men, commanded by Col. Scott, defeated a native army of 18,000 men. Pop. (1891) 117,910; (1901) 127,734.

NAG'S HEAD CONSECRATION: name referring to a story circulated first by the Rom. Catholics in England, 40 years after the event, regarding Abp. Parker's consecration. It was to the following effect: On the passing of the first Act of Uniformity in the first year of Queen Elizabeth, 14 bishops vacated their sees, and all the other sees, excepting that of Llandaff, being vacant, there was a difficulty in maintaining the hitherto unbroken succession of bishops from apostolical times. Kitchin of Llandaff refused to officiate at Parker's consecration as abp. of Canterbury; consequently the Prot. divines procured the help of Scory, a deprived bishop of the reign of Edward VI., and all having met at the Nag's Head Tavern in Cheapside, London, they knelt before Scory, who laid a Bible on their heads or shoulders, saying: 'Take thou authority to preach the word of God sincerely;' and they rose up bishops of the New Church of England. The story is discredited by the Rom. Cath. historian Lingard, and is carefully refuted by Strype in his life of Parker. The facts of the case are, that the election took place in the chapter-house at Canterbury, the confirmation at St. Mary le Bow's Church in Cheapside, and the consecration in the chapel of Lambeth Palace. Scory, then elected to the see of Hereford; Barlow, formerly Bp. of Wells, then elected to Chichester; Coverdale, formerly of Exeter, and never reappointed to any see; and Hodgkin, suffragan of Hereford, officiated at the consecration. The Nag's Head story probably arose from the company having possibly gone from Bow Church, after the confirmation, to dine together at the tavern near by, according to the prevailing custom. There is no evidence that the due succession of bishops in the English Church has ever been broken.

NAGY, *nŏdj:* Hungarian word, meaning 'great'; prefixed to the names of many towns in Hungary and Transylvania. (For many of the towns that take this prefix, see the name that comes after it.)

NAGYAGITE, n. *năg'ĭ-ă-jīt* [from *Nagyag*, in the Siebenberg]: a mineral consisting of tellurium and lead, with traces of gold, silver, copper, and sulphur.

NAGY BAN'YA: see BANYA.

NAGY ENYED, *nŏdj ĕn-yĕd':* small town of Transylvania, on the Masro, 17 m. n.n.e. of Karlsburg. It contains a famous Calvinistic college. Pop. (1880) 5,362.

NAGY KAROLY, *nŏdj kŏh-rŏly'* (Great Karoly): town of Hungary, cap. of the county Szathmar, 37 m. e.n.e from Debreczin, on a small feeder of the Theiss. It has several important annual fairs, and a trade in corn and cattle. It was fearfully devastated 1887, July, by a hurricane and water-spout. Pop. (1880) 12,523; (1890) 13,475.

NAGY-KOROS': see KÖRÖS.

NAGY-ZRE'BEN: see HERMANNSTADT.

NAGY-VA'RAD: see GROSSWARDEIN.

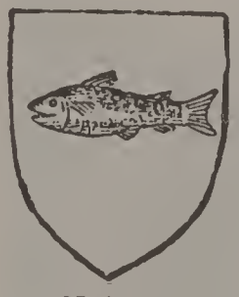
NAHANT, *na-hănt':* tp. in Essex co., Mass., till 1853 a part of Lynn; in Massachusetts Bay; 10 m. n.e. of Boston. It is a rocky peninsula, extending 3½ m. into the bay, forming the e. side of Lynn harbor, and connected with the mainland by a hard narrow beach of sand and gravel. The rocks along the shore are 20–60 ft. above high water, and contain numerous caves, notably Swallow's Cave and Spouting Horn. The bay extremity, Great Nahant, is 2 m. long, ½ m. broad, 463 acres. Little Nahant is a rocky ridge of 40 acres, about ½ m. in from Great Nahant, and rising 80 ft. above the sea. This peninsular town contains 2 churches, 2 schools, several hotels, and numerous handsome residences, and has long been a very attractive summer resort. Pop. (1870) 475; (1890) 880; (1900) 1,152; (1910) 1,184.

NA'HUM, *nā'hŭm* · one of the twelve minor prophets of Israel: either a native of Elkosh, in Galilee, or the son of a man named Elkosh. The identification of his birthplace with Capernaum (Nahum's Village) or with a place called Elkosh, on the e. side of the Tigris, not far from Nineveh, is only vague speculation. He was probably a contemporary of Isaiah, and lived about B.C. 713–711. The burden of his 'vision' (chap. iii.) is the destruction of Nineveh and the downfall of the Assyrian kingdom. His style is full of animation, fancy, and originality, and at the same time clear and rounded. His language throughout is classical, and in the purest Hebrew, belonging to the second half of Hezekiah's reign, or to the time immediately following the defeat of Sennacherib before Jerusalem. Tradition points out various places as containing N.'s tomb. A commentary on N., with special reference to Assyrian monuments, was written by O. Strauss (1853). See Ewald's *Prophets*, and the works on Introduction to the Old Testament.

NA'IA: see ASP: COBRA.

NAIAD, n. *nī'ăd* or *nā'yăd* [Gr. *naiădēs*, the naiads—from *naein*, to flow: It. *najade*: F. *naiade*]: in *anc. myth.* one of the water-nymphs, or female deities said to preside over rivers, fresh-water lakes, and fountains. They were believed to possess the power of inspiration; hence, soothsayers and others are sometimes called *nympholeptoi* (seized by the nymph). They were represented as half-clothed maidens, and frequently as companions of Pan, of Hercules, patron of warm springs, or of the Sileni and the Satyrs, in whose jovial dances they joined. See NYMPHS.

NAIADES, *nā'yad-ēz*, or NAIADA'CEÆ, *nā-yad-ā'sē-ē*, or POTAMEÆ, *po-tā'mē-ē*: nat. order of endogenous plants, divided by some botanists into several orders (*Juncagineæ*, *Zosteraceæ*, etc., containing in all not quite 100 known species, all aquatic plants, some inhabiting the ocean, some found in lakes and ponds, some in streams. They all are of very cellular structure; the leaves have parallel veins, and the flowers are inconspicuous. To this order belongs the Pondweed (*Potamogeton*). To this order also belongs the GRASSWRACK (q.v.) used for stuffing mattresses. The Lattice-leaf (q.v.) of Madagascar is one of the most interesting species, and one of the few which attract notice as in any way beautiful.



Naiant.

NAIANT, *nā'yant* or NATANT, *nā'tant* [see NATANT]: heraldic term applied to a fish borne horizontally across the shield in a swimming position.

NAIK, or NAICK, n. *nā'ĭk* or NAIGUE, [Skr. *nayak*, a chief, a leader]: in *India*, native subaltern officer among Indian and Anglo-Asiatic troops, a corporal whose functions are somewhat analogous to those of the drill-sergeant among European troops.

NAIL, n. *nāl* [Ger. *nagel*, a nail of the hand, a nail for fastening with: Icel. *nagl*, a nail, a claw: Lith. *nagas*, a claw: *naginti*, to scratch: Skr. *nakha*, a nail]: one of the flat horny substances at the ends of the fingers and toes (see below): pointed piece of iron or other metal, commonly with a head, used to fasten woodwork (see below): measure of length, one-sixteenth of a yard [Fin. *naula*, applied to the nails by which the different weights are marked on a steelyard]: V. to fasten or unite with nails. NAIL'ING, imp. NAILED, pp. *nāld*. NAILER, n. *nāl'ėr*, one whose trade is to make nails. NAIL'ERY, n. *-ėr-ĭ*, a nail manufactory. ON THE NAIL, without delay; immediately. NAIL-HEADED COPPER ORE, the name given in Cornwall to certain crystals of chalcosine, from their fanciful resemblance to the heads of nails. TO HAVE NAILED IT, to have secured it. TO NAIL THE COLORS TO THE MAST, in *naval warfare*, a signal to the enemy that there will be no surrender: *figuratively*, to intimate

a determination to succeed at every risk and never to abandon the attempt. TO HIT THE NAIL ON THE HEAD, to touch the exact point; to understand the matter. *Note.*—when the *nails* are compressed, curved, or pointed, and extended beyond the digit, they are called *talons* or *claws;* when they encase the extremity of a digit like a box they are called *hoofs.*

NAILS: flattened, elastic, horny plates, placed as protective coverings on the dorsal surface of the terminal phalanges of the fingers and toes. Each nail consists of a *root,* or part concealed within a fold of the skin; a *body,* or exposed part attached to the surface of the skin; and a free anterior extremity called the *edge.* The skin below the root and body of the nail is termed the *matrix,* from its being the part from which the nail is produced. This is thick, and covered with highly vascular papillæ, and its color is seen through the transparent horny tissue. Near the root, the papillæ are smaller and less vascular; hence the portion of nail corresponding to this part is of whiter color; from its form, this portion is termed the *lunula.* It is by the successive growth of new cells at the root and under the body of the nail that it advances forward, and maintains a due thickness, while its growth in a proper direction is insured. For the chemical composition of the nails, see HORNY TISSUES, to which class of structures they belong. According to the observation of Beau, the finger-nails grow at the rate of about two-fifths of a line in a week, while the toe-nails grow with only about one-fourth of that rapidity. When a nail has been removed by violence, or has been thrown off in consequence of the inflammation beneath it, a new nail is speedily formed, provided the matrix has not been seriously injured. The health of the nails is affected by local or general diseases. They may become thickened (hypertrophy) by inflammation or a degeneration of nerves; diminished in size (atrophy) from traumatic influences; malformed by disturbed function of the matrix; degenerated from faulty nutrition, and discolored in various diseases.

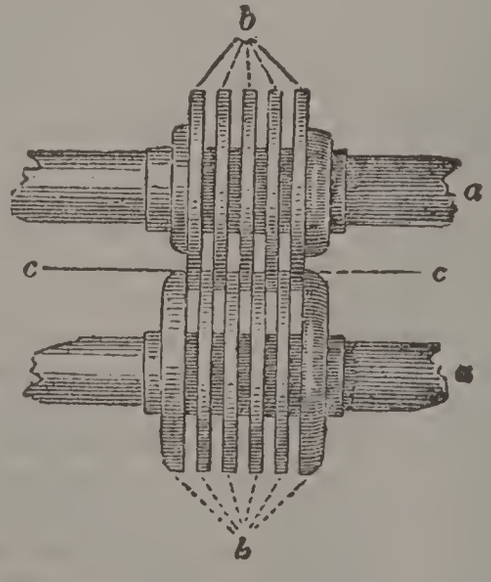
There is a very common and troublesome affection popularly known as *ingrowing nail.* Its most usual seat is by the side of the great toe. It arises not from any alteration of the nail, but from the adjacent soft parts being constantly pressed by tight shoes against its edge. These parts become swollen and inflamed; suppuration ensues, and an intensely sensitive ulcer is formed, in which the nail is embedded. Surgical advice should at once be sought in these cases, as there is no probability that the ulcer will heal spontaneously, especially if the patient continue to move about, and thus keep up irritation. In obstinate cases, it is not unfrequently necessary to remove a portion of the nail or the flesh at the side of the toe which is imprisoning the corresponding portion of the nail.

NAILS.

NAILS: pointed pieces of metal, usually with flattened or rounded heads, used for driving into wood-work, for the purpose of holding the pieces together. A variety, in which the head is very large, and the spike portion small, used by shoemakers for protecting the soles of boots and shoes from wear, is called the *hob-nail;* another, made by cutting thin plate-iron into thin pointed pieces of various lengths, is called *brads;* these sometimes are without heads, but are usually made with a slight projection by way of a head. When made small, with flat heads, for attaching cloth or hangings in upholstery-work, they are called *tacks;* and when very large for heavy carpentry, *spikes.*

Nail-making.—Formerly, all nails were hand-made, by forging on an anvil; and in Britain and n. Europe, vast quantities are still made in this manner, being preferable, for many kinds of carpenter's work, to those made by machinery. In France, the greater part of the nails for light carpentry are of soft iron wire, pointed with the hammer; and in order to head them, they are pinched in a toothed vice, which leaves the portion for the head projecting, and makes below it three or four grooves in the nail, which increases its hold on the wood when driven home. The head is beaten into a counter-sinking on the vice, which regulates the size.

The iron used for hand nail-making is sold in bundles, and is called *nail-rods;* it is prepared either by rolling the malleable iron into rods or small bars of the required thickness—which process is employed only for very fine qualities—or by cutting plate-iron into strips by means



of rolling-shears: these shears consist of two powerful revolving shafts (*a*, *a*, fig.), upon which are fixed disks of hard steel with squared edges (*b*, *b*, fig.). The disks of one shaft alternate with those of the other; they are of the thickness of the plate to be cut, and the shafts are so placed that a small portion of one set of the disks are inserted between those of the other set. When the shafts are revolving, a plate of iron is pressed between

the disks in the plane is the dotted line *c, c,* fig.; and it is forcibly drawn through, the steel disks cutting the plates into strips with great rapidity.

Several inventions, in which the United States took the lead, have been introduced, and are successfully worked, for making nails direct from plate-iron, either by cutting them out cold or hot; and a very large proportion of the nails in use are made in this way. Nail-making by machinery was originated in Massachusetts 1810. Formerly nails were classified as to size, from two-penny, 1 in. long (880 to the lb.), to thirty-penny, 4½ in. long (16 to the lb.). The names 6 lb., 7 lb., etc., indicate that 1,000 of the nails should weigh that number of lbs. Round nails made from wire are increasingly used.

NAIN, *nā'ĭn:* hamlet in the n. of Palestine, scene of the narrative in Luke vii. 11-17, of Christ calling back to life the widow's son. It is about 6 m. s.e. of Nazareth, a little to the left of the road going s. The site is a low spur n. of the mountain of Dŭhy, where the name (Heb. *beauty*) was appropriate. There stand now only a few recent stone or mud hovels; but there are ruins of larger buildings. The phrase 'gate of the city' in Luke appears to have meant no more than place where the road enters between the houses of the village.

NAINA (or NYNEE) TAL: summer resort of the lieutenant-governor of the Northwest Provinces of India; small town in Kumaon, on the outer range of the Himalaya, and overlooking a beautiful lake 7,000 ft. above sea-level. Here a disastrous landslip occurred 1880, by which many lives were lost.

NAIN SING: Hindu explorer: b. Numaon; d. Morabad 1882, Feb. 1. He received from a military officer, Colonel Montgomerie, instruction and stimulus for the work of exploration, which he afterward carried on in Central Asia, first in Cashmere and Ladak (1856-7), and later in Tibet, making a journey (1865-6) to Lhasa (q.v.), which won him recognition from the Royal Geographical Society. This was followed by other important journeys, chief of which was that across the Tibetan plateau (1874-5), of which he was the first explorer. The *Geographical Magazine* (1876) published an account of this journey, with a map.

NAIRN, *nārn:* royal burgh and capital of a county in northeastern Scotland, where the river Nairn enters the Moray Firth. It commands a grand and extensive view of the coast of Ross-shire, including Cromarty bay, nearly opposite. Nairn was regalized by William the Lion. It has little historical interest. It is noted for the excellence of its sea-bathing and artificial baths. The temperature is mild and equable. There is a commodious harbor. The town has a literary society, a museum, a newspaper, and several banks. It is conspicuous for good and cheap education. Pop. 5,100.

NAIRNSHIRE, *nārn'sher:* small county on the sea-coast of n.e. Scotland; bounded n. by the Moray Firth, and on its other sides by the counties of Inverness and Moray, of the latter of which it anciently formed a part. It extends n. and s. 22 m., and 15 m. e. to w.; 215 sq. m. or 137,500 acres, of which about 26,000 are under cultivation. Pop. (1871) 10,225; (1881) 10,455.—Nairn is the only royal burgh in the county, but there are the villages of Cawdor and Auldearn. The soil is mostly light and sandy. There is, however considerable agricultural activity, though the county is better known for cattle-breeding. An important cattle 'tryst' is held at Cawdor once a month during the greater part of the year. The climate of this county is distinguished for its salubrity, and the temperature is remarkably equable. The thermometer in the shade did not rise above 78° 3′, or fallen below 11° 2′, during a recent period of 20 years. According to the latest observations, the yearly rainfall did not amount to more than 26 in., the greatest fall being in Oct. and the least in April. At Brackla Distillery, 40,000 to 50,000 gallons of spirits are manufactured annually. The river Nairn runs through the county in a beautiful valley, which presents particularly attractive and romantic scenery in the neighborhood of Cawdor Castle, one of the residences of the Earl of Cawdor. This castle is of uncertain antiquity, and in excellent preservation. It was the residence of the ancient Thanes of Cawdor, one of whom is mentioned in *Macbeth*. About 1510, the estates belonging to the earldom passed by marriage from the old family of Calder into the hands of a son of the Duke of Argyle, and are still in the possession of his descendants. Not a few other objects of antiquarian interest are to be found in the county of Nairn.

Naissant.

NAISSANT, *nās'ant:* in heraldic blazon, an animal depicted as coming forth out of the middle—not like *Issuant* or *Jessant* (q.v.), out of the boundary line—of an ordinary.

NAITHLESS: another spelling of NATHLESS, which see.

NAIVE, *nâ'ēv* [F. *naïf* and *naïve*, ingenuous, lively—from L. *natīvus*, natural, native]: having unaffected simplicity; artless; ingenuous. NAÏVELY, ad. *nâ'ēv-lĭ*, with unaffected simplicity. NAÏVETÉ, n. *nâ-ēv-tā'* [F.]: native simplicity; unaffected plainness; artlessness.

NA'JA HA'JE: see COBRA DA CAPELLO.

NAKAMURA MASANAWO (or NAKAMOORA MASAUWO): born about 1825, Tokio, Japan. He was educated at the university in his native place, and after acquiring a thorough knowledge of both the Japanese and Chinese language and literature, he studied Dutch for a while and then mastered English, copying a dictionary of the latter language with a pen. He taught in private

schools, held a professorship in a college, went to England 1866, where he studied and had the oversight of some Japanese students for two years. Returning to Japan he translated into his native language the constitution of the United States, Washington's Farewell Address, portions of Franklin's works, Mill on Liberty, and an anonymous work in favor of Christianity. He resigned his rank in the Samuria, joined the common people, and became a leader in various social and political reforms. He was made, 1875, manager of a normal school which had just been established for girls by the Empress of Japan. Among his later translations are *International Law* by Wheaton, and *Self-Help* by Smiles.

NAKED, a. *nā′kĕd* [Goth. *naquaths;* Ger. *nackt;* Icel *necquidr;* L. *nudus*, naked: Gael. *nochd*, v. to uncover, adj. bare, naked]: bare; uncovered; plain; manifest; having no clothes on; defenseless; unassisted by glasses —applied to the sight; destitute; in *bot.*, without pubescence; applied to seeds not contained in a true ovary, also to flowers without any floral envelope. NA′KEDLY, ad. *-lĭ.* NA′KEDNESS, n. *-nĕs*, the condition of being naked; bareness; openness. NAKED EYE, the eye alone, or unassisted by glasses or a telescope. NAKED FLOORING, the timber-work which supports a floor.—SYN. of 'naked': bare; nude; destitute; unaided; unarmed; unprovided; evident; mere; simple; open.

NAKHICHEVAN-ON-THE-DON, *nâk-ē-shē-vân′:* thriving town of s. Russia, govt. of Ekaterinoslav, on the right bank of the Don, near the mouth of that river, two m. e. of Rostov. It was founded 1779 by Armenian settlers from the Crimea, and had (1880) 16,258 inhabitants, mostly Armenians, belonging to the Greek-Armenian Church. The inhabitants are engaged in manufacture of silver ornaments and woolen goods, and there is extensive trade.

NAKSHATRA [Sanskrit, prob. compound of an obsolete base *naksha*, night, and *tra*, protecting, *literally* night-protecting; meaning properly star, as in the Veda]s: term applied to the asterisms lying in the moon's path, or to the mansions in which the moon is supposed to rest in her, or rather, according to Hindu notions, *his* path. The number of these asterisms was reckoned originally at 27, later at 28; and mythology transformed them into as many daughters of the patriarch Daksha, who became the wives of the moon: see MOON. Biot, the distinguished French astronomer, endeavored to show that the Hindu system of the Nakshatras was derived from the Chinese *sien;* but his theory, though supported by very learned arguments, has been refuted by Prof. Whitney of Yale Univ. in his notes to Burgess's translation of the *Sûrya-Siddhânta* (New Haven 1860), and by Prof. Müller in his preface to the 4th vol. of the *Rig-Veda* (Lond. 1862). There is scarcely room for doubt that the system of the Nakshatras originated from the Hindu mind.

NALA, *năl'ă*, Hind, *năl'a*: a legendary king of anc. India—a king of Nishadha—whose love for Damayantî, daughter of Bhîma, King of Vidarbha, and the adventures arising from, or connected with, it—the loss of his kingdom, the abandonment of his wife and children, and their ultimate restoration—have supplied several Hindu poets with the subject of their muse. The oldest poem relating to N. and Damayantî is a celebrated episode of the *Mahâbhârata* (q.v.), edited both in India and in Europe, and translated into Latin by Bopp; German by Kosegarten, Bopp, Rückert, and Meier; English by Dean Milman. The two other renowned poems treating of the same legend, but with far less completeness, are the *Nalodaya* (q.v.) and the *Naishadhacharita* of S'rî-Harsha.

NALODAYA: name of a Sanskrit poem prized by the modern Hindus. Its subject is the story of Nala (q.v.), but more concisely narrated than in the episode of the *Mahâbhârata*, whence its contents are borrowed: and its reputed author is Kâlidâsa (q.v.). Great doubts must attach to this authorship, if by Kâlidâsa the author of *S'âkuntala* is meant, and not some other poet bearing the same name; for the merits of this poem consist neither in elevation of thought nor in richness of fancy: they are sought for by the Hindus in its elaborate and artificial diction, and in its alliteration of every variety, which, to a European mind of culture and taste, would be no more than an intolerable jingle of sounds, devoid of poetical worth. The text of the poem, with a modern commentary, has been edited (Berlin 1830) by F. Benary and (Calcutta 1844) by W. Yates, who added to his edition a free metrical translation of the text, and an essay on Sanskrit Alliteration.

NAMAQUALAND, *nâ-mâ'kwâ-lănd*, GREAT: extensive region in s. Africa, n. of the Cape Colony, from the Orange river, lat. 29° 30′, to Walfish Bay, lat. 23°, and inland from the w. coast to the Kalihari Desert, comprising about 460,000 sq.m. It is inhabited principally by wandering tribes of Namaquas (q.v.). This region is drained chiefly by a large periodical water-course, called the Oup, Borradaile, or Great Fish river, which, running from n. to s. about 450 m., joins the Orange river nearly at right angles, about 90 m. from its mouth. Except in the n., where there are lofty plateaus, it is a most sterile and barren region, and along a coast-line of more than 400 m. does not present a single running stream; but a few little bays along the coast, such as Angra Pequena (where 300 sq. m. were, 1883, acquired by a German company for a 'trading colony'), Sandwich Harbor, and Walfish Bay, afford safe anchorages. The valley of the Oup is bounded on each side by ranges of flat-topped barren mountains, which eastward sink away into the waterless though wooded flats of the Kalihari Desert, and coastward stretch into vast sandy downs, against which the southern Atlantic beats an unceasing surf,

rendering landing very dangerous, and enveloping the coast in a perpetual mist. The chief productions of the region are cattle, for the rearing of which the country seems favorable. On the edge of the Kalihari, ivory and ostrich feathers are collected, and copper ore seems abundant in several localities. Guano is found at Ichaboe and many little islands on the coast, and considerable fisheries are carried on by Cape houses in many of the bays.

The lion, giraffe, rhinoceros, hippopotamus, and large game generally, are still found in N , though fast diminishing before the firearms of the Namaquas. The snakes are considered especially venomous. The gemsbok, eland, and other large antelopes, now almost unknown in the Cape Colony, are still numerous in the unfrequented wastes of this region. The climate is extreme, and though, on the whole, not unhealthful, is very trying to European constitutions. The first English traveller in N. was Sir J. Alexander, who, 1837, traversed it from n. to s. See the travels of Andersson, Moffat, Campbell, and Le Vaillant. N. is virtually under the jurisdiction of the Cape Colony. The native tribes, numbering probably about 40,000 souls, speak the Namaqua language. In 1885 this region, exclusive of Walfisch Bay, which is British, became a German possession.

NAMA'QUALAND, LITTLE: a division of Cape Colony s. of the Orange river, formerly part of the dist. of Clanwilliam, and included with the country n. of it under the general name of Namaqualand. It is very barren, covered with rugged volcanic-looking hills, through which the Gariep or Orange river appears, through some convulsion of nature, to have forced its way to the sea. Little N. has of late years afforded a very large supply of copper ore of excellent quality (in 1878 nearly 12,000 tons); but the mines, though well known to the Dutch 200 years ago, were not worked till after 1852. The principal river is the Orange of the colonists, which divides the Cape Colony from Great Namaqualand; all the other streams are merely periodical torrents, often dry for years. The seat of magistracy is at Springbok Fontein, about 80 m. from the principal harbor, Hondeklip Bay, and there are situated the very rich mines of the Cape Copper Company. Many scattered tribes of Namaquas and Bastard Hottentots roam the bank of the Orange river, and in the neighborhood of the mines are numerous Dutch farmers and English settlers. All the larger mammalia, except a few gemsbok, are extirpated; but troops of ostriches are still numerous on the grassy flats of the Bushman country. The geological features of this region are peculiarly interesting, and have been thoroughly explored by A. Wylie, on behalf of the Cape government. The rocks are generally of granite or gneiss, intersected with numerous veins of cupreous indications, and near the Orange river present many very curious features. The coast-line extends for 100 m. with a few little bays, such

as Port Nalloth and Hondeklip, where there is moderately safe anchorage, and generally presents a shore covered with low granite rocks. At Hondeklip Bay, a boulder painted red forms a distinguishing landmark.

NAMAQUAS, *nâ-mâ'kwaz:* principal existing tribe of the race generally known under the name Hottentot. They inhabit Great Namaqualand, n. of the Gariep or Orange river, and the country a few m. s. of it, as far as the Kamiesbergen. They are a pastoral people of rather predatory habits, and live under the rule of their chiefs, whose powers, however, are very limited. Differing from the Bosjesmen Hottentots, the N. are a tall, well-made, active people, though presenting the usual peculiarities of the race, such as the light olive complexion, the oblique eye, and short tufted hair. They speak a dialect of the Hottentot language, which, however, differs considerably from that used by other tribes of that people. Mission stations of the Rhenish and Wesleyan societies have been for many years established among them, and in a few localities, near the Cape Colony, with considerable success; and the New Testament and some elementary works have been translated into the Namaqua dialect. On the n. borders of the regions that they inhabit, the N., under the chief Africaner, descendant of a fugitive slave from Cape Colony, have for many years kept up a predatory and bloody war with the tribes of Ovampos and Damaros, n. of Walfish Bay. The total number of N. cannot exceed 50,000 or 60,000, scattered over a region of at least 150,000 sq. m., and there is every prospect of the pure Hottentot tribes soon becoming extinct, or at least absorbed, being gradually supplanted by the more energetic and civilized Bastard races, who, in civilization and appearance, are little inferior to the ordinary Dutch Boer of Cape Colony. Many of the southern N. possess wagons and oxen, and are employed in the transport of copper ore from the mines of Little Namaqualand to the shipping port at Hondeklip Bay. A few of the peculiar customs of the Hottentot tribes, described by Kolben nearly 200 years ago, may be still traced among the more remote tribes of the N.; but contact with the Cape Colonists, and the efforts of the missionaries, have partially civilized this race, so that an ordinary Hottentot is quite as respectable a savage, or perhaps more so, than his Betjuana or Amakosa brethren.

NAMAYCUSH, *năm'ā-kŭsh (Salmo namaycush)*: fish nearly allied to the salmon and trout, native of the great lakes and interior rivers of N. A. It is often taken of a size varying from 20 to 40 lbs., and is said sometimes to reach 60 lbs. It is esteemed for the table. It is caught at the same fisheries with the Whitefish (q.v.).

NAMBY-PAMBY, a. *năm'bĭ-păm'bĭ* [a familiar and colloquial expression]: a term of contempt applied by his enemies to the poetry of Ambrose Phillips about the close of the 17th c.; sentimentally weak; affectedly pretty, as poetry.

NAME, n. *nām* [Goth. *namo;* Dut. *naam;* Ice.. *namn;* Fin. *nimi;* Skr. *nâman*, a name: F. *nom;* It. *nome*—from L. *nomen*, a name—from L. *noscĕrĕ*, to know]: that by which a person or thing is called or designated (see below): reputation; character; that which is commonly said of a person; a person; renown; fame; memory; a race or family: V. to designate or point out by some title; to mention by name; to specify; to call; to nominate. NAM'ING, imp. NAMED, pp. *nāmd.* NAME'LESS, a. *-lĕs*, without a name; anonymous. NAME'LESSLY, ad. *-lĭ.* NAM'ER, n. *-ėr*, one who. NAMELY, ad. *nām'lĭ*, that is to say. NAMESAKE, n. *nām'sāk*, one having the same name; one called or named after out of regard to another. CHRISTIAN NAME, or GIVEN NAME, the name that a person receives at baptism, being the first part of the name, as John, James, Margaret. SURNAME, *sėr'nām* [*sur*, beyond or upon, and *name*]: a name added to the Christian name, e.g., *Nisbet* and *Beattie*, in the names Robert *Nisbet* and William *Beattie.* IN NAME, in profession; not in reality. IN THE NAME OF, in behalf of; by the authority of. A PROPER NAME, in *gram.*, a name that can be applied to one person or thing only of the same kind or class, as John, London, Europe. TO CALL NAMES, to use opprobrious or reproachful language in speaking to. TO TAKE A NAME IN VAIN, to use the name lightly or profanely. NAME-PLATE, a polished metal plate on which the name of a person and his profession or trade are engraved, to be fastened on the front of a door, as a notification to the public.—SYN. of 'name, n.': distinction; note; appellation; title; denomination; epithet; designation;—of 'name, v.': to designate; denominate; term; call; mention; specify; nominate; style.

NAME: word designating a particular person or thing in distinction from other persons or things. A N. attached to a person is called a proper name. Names distinguishing one individual from another have been in use from the earliest ages of human society. Among the Jews, the N. given to a child either originated in some circumstance of birth, or was an expression of religious sentiment. Old Testament names almost all are original—i.e., given in the first instance to the person bearing them; but the Jews, like other nations, after accumulating a considerable stock of names, began to repeat them, and we find few names in the New Testament which had not been used before. In Old Testament times, it was an occasional practice to adopt a change of N. on the occasion of an important event in one's life.

The Greeks bore only one N., given on the tenth day after birth, which it was the right of the father to choose, and alter if he pleased. The earliest Greek names are generally expressive of some quality in high estimation, as valor, skill, wisdom, or gracefulness (Callimachus, excellent fighter; Pherecrates, strength bringer; Sophron, wise; Melanthus, black flower). In later times, when the faith in the gods was on the wane, names derived

from Apollo and Athene, or indicative of the favor of Olympus (Apollodorus, gift of Apollo), came more into fashion. The eldest son generally bore the name of his paternal grandfather, and the confusion arising from repetition of the same name was obviated by appending the father's name (either simply, or turned into a patronymic), the occupation, the place of birth, or a nickname.

The Romans at a very early period bore two names, and afterward every Roman citizen had three. The *prænomen*, like our Christian name, was personal to the individual—Caius, Marcus, Cneius; in writing, generally abbreviated to an initial C., M., or two letters, Cn. It was given in early times on the attainment of puberty, and afterward on the ninth day after birth. There were about 30 recognized prænomina. Women had no prænomen till marriage, when they took the feminine form of that borne by their husband. Every Roman citizen belonged both to a *gens* and to a *familia* included in that gens. The second name was the *nomen gentilicium*, generally ending in *-ius*, *-eius*, or *-aius*. The third name was the hereditary *cognomen* belonging to the familia. Cognomina were often derived from some bodily peculiarity, or event in the life of the founder of the family. A second cognomen, or *agnomen*, as it was called, was sometimes added for honorary distinction. In common intercourse, the prænomen and cognomen were used without the nomen gentilicium, as C. Cæsar for C. Julius Cæsar, M. Cicero for M. Tullius Cicero. The Roman names were in their origin less dignified and aspiring than the Greek; some were derived from ordinary employments, as Porcius (swineherd), Cicero (vetch grower); some from personal peculiarities, Crassus (fat), Naso (long-nosed); a few from numerals, Sextus, Septimus.

The Celtic and Teutonic names, like the Jewish and Greek, had been originally very significant; but at an early period their exuberance became checked; people contented themselves with repeating the old stock. While the speech of Europe was undergoing a transformation, the names in use remained the same; belonging to an obsolete tongue, their signification by-and-by became unintelligible to the people using them. Many are derived from 'God,' as Gottfried, Godwin; some from an inferior class of gods known by the title *as* or *ans*, whence Anselm, Oscar, Esmond; others from elves or genii, Alfred, Alboin, Elfric (Elf King). Bertha is the name of a favorite feminine goddess and source of light, from the same root as the word 'bright;' the same word occurs as a compound in Albrecht, Bertram. To a large class of names indicating such qualities as personal prowess, wisdom, and nobility of birth, belong Hildebrand (war brand), Konrad (bold in council), Hlodwig (glorious warrior), called by us Clovis, and the original of Ludwig and Louis. The wolf, the bear, the eagle, the boar, and the lion entered into the composition of many proper names of men, as Adolf (noble wolf), Arnold (valiant eagle), Osborn (God bear). Respect for

feminine prowess also appeared in such names as Mathilde (mighty amazon), Wolfhilde (wolf heroine). The spread of Christianity threw a number of the old names into comparative oblivion, and introduced new ones. The name selected at baptism was taken more frequently from the history of the Bible or the church than from the old traditional repertory, which, however, was never altogether disused. Many names, supposed to be local and very ancient, particularly in the Scottish Highlands, Wales, and Cornwall, are in reality corruptions of names of Christian origin in use elsewhere. Owen, Evan, and Eoghan (the latter often Anglicized into Hector) all seem to be forms of Johann or John. A change of name was sometimes made at confirmation.

Periods of religious and political excitement have had powerful influence in modifying the fashion in names. The Puritans would admit only two classes of names, those directly expressive of religious sentiment—Praise-God, Live-well—and names which occur in Scripture; these latter used indiscriminately, however obscure their meaning, or whatever the character of the original bearer of them. Old Testament names were used in preference to New, probably because they did not convey the notion of a patron saint. Old Testament names still are frequent in the United States, where exists a medley of Christian names from many sources. At the French Revolution, names supposed to savor of either loyalty or religion were abandoned, and those of Greek and Roman heroes came into vogue instead. The Augustan period of English literature gave temporary popularity to such feminine names as Narcissa, Celia, Sabina. In Germany, the names in use are particularly free from foreign admixture; they almost all are either of Teutonic origin, or connected with the early history of Christianity. In Britain, the number of names has, especially since the Reformation, been more limited than in most other countries. In some families of distinction, unusual names have been handed down from father to son for centuries —e.g., Peregrine among the Berties, and Sholto in the Douglas family. The accumulation of two or more Christian names did not become common till the present century, and another practice which has gained ground in Britain and the United States is the use of surnames as Christian names. More recently, various old names, particularly feminine names, e.g., Maud, Florence, Ethel, have been withdrawn from their obscurity, and resuscitated.

The use of fixed family *surnames* cannot be traced much further back than the latter part of the 10th c. They came into use first in France, particularly in Normandy. At the conquest, they were introduced into England by the Norman adventurers, and were general at the Domesday Valuation. Many of the followers of William had taken names from their paternal chateaux or villages on the other side of the Channel, names which were used with the French preposition *de* before them. Their

younger sons and others applied the 'de' to estates awarded them as their portion of the conquered country, and called themselves De Hastings, De Winton, etc., a prefix probably never in vernacular use in England, and completely discarded with the disappearance of Norman-French, unless in a few cases where it was retained for euphony, or from coalescing with the initial vowel, as in De la Bèche, Danvers (d'Anvers), Dangerfield (d'Angerville). When English was used in place of Norman-French, the 'de' was always rendered into 'of.' The affectation of resuming it in recent times is as unwarrantable in theory as in taste. Such a designation as Lord De Tabley of Tabley House is an unmeaning tautology. The Scotch have a more expressive designation when they say Colquhoun of that Ilk. In France and Germany, a territorial surname (denoted by 'de' or 'von') came, when surnames spread to all classes, to be the mark of nobility, so much so that in later times, when any one was ennobled by the sovereign, the 'de' was prefixed to his previously plebian and not territorial name. In Britain, the 'de' was never considered the test of nobility; the names of some of the most distinguished families were not territorial — e.g., Stewart, Butler, Spencer. In Scotland, surnames were scarcely in use till the 12th c., and were for a long time very variable. The assumption of surnames by the common people is everywhere of much later date than their use by noble (gentle) families. Even yet, they can hardly be said to be adopted by the people of the wilder districts of Wales.

There are many existing local surnames in Britain besides those derived from the names of the manors of the gentry or landholders. Farms, homesteads, the natural features of the country, all gave their names to those who resided at or near them; hence such names as Wood, Marsh, Dale. The preposition 'at' is in a few cases retained, as in Atwood, A'Court, Nash (atten-ash, i.e., at the ash). The travelling habits of the Scots account for such names as Inglis, Fleming, Welsh (the original of Wallace), applied to those who had visited foreign parts; and sometimes a Scotsman, wandering into England, returned with the acquired name of Scott.

A large class of surnames are patronymics, often formed by 'son,' or its equivalent in the language of the country, added to the Christian name of the father. Names of this sort often fluctuate from generation to generation. Alan Waltersou had a son, Walter, who called himself Walter Alanson. The genitive case of the father's name sometimes served the same purpose, as Adams, Jones; and similarly in Italian, Dosso, Dossi. A fashion of using 'Fitz,' the equivalent of 'son,' before the ancestral name, as in Fitzherbert, prevailed temporarily in Normandy, whence it was imported into England. In the Highlands of Scotland, the prefix 'Mac' (Macdonald) served the same purpose, which, however, fluctuated far longer than the patronymic surnames of

England and the Lowlands; so also the 'O'' (grandson) of the Irish (O'Neil), and 'Ap' of the Welsh (Ap Rhys, otherwise Apreece). The 'de' of France had sometimes a similar origin, as in d'André, d'Hugues; and still more frequently the 'de,' 'dei,' or 'degli' of Italy—di Cola, di Giacomo.

Office, occupation, or condition, gives rise to surnames —e.g., Knight, Marshall, Page, Smith, Brewster, Shepherd; in Germany and Holland, Rauber and de Rogver (robber): and from such appellatives, patronymics may be again derived; thus, we have Smithson, de Maistre (master's son), M'Nab (son of the abbot), M'Pherson (son of the parson), del Sarto (son of the tailor), etc. So also personal qualities—Black, White, Strong, Stark, Lang (long), Littlejohn, Cruikshanks; and nicknames have frequently been perpetuated as surnames. We have also surnames derived from the signs and cognizances borne in the middle ages, not only by inns and shops, but by private houses. John at the Bell became John Bell; at Middleburg, in Holland, Simon, apothecary in the 'Drake,' or Dragon, became Simon Draek; hence, probably, the frequency of family names derived from animals, and also of those beginning with 'Saint;' though this last class may sometimes have had its origin in the first owner of the name dedicating himself to the service of the saint in question. In Scotland and Ireland, 'The' is a distinctive title borne by the heads of some old families—as 'The Chisholm,' 'The O'Connor Don.' In the Highlands of Scotland, the chief of a clan is usually addressed by the name alone in a marked manner: thus, 'Macleod' implies specially Macleod of Dunvegan, in Skye, head of the clan Macleod; 'Mackintosh,' in like manner, applies solely to Mackintosh of Moy, in Inverness-shire.

In England, the number of existing surnames approaches to 40,000, or about one to every five hundred individuals; in Scotland, there are far fewer surnames in proportion to the population. The remarkable predominance of certain surnames in certain localities—as Campbell, Cameron, Maclean in Argyleshire, Macdonald in Inverness, Mackay in Sutherland, Gordon and Forbes in Aberdeenshire, and Scott, Ker, Elliot, Maxwell, and Johnstone on the borders—arises from the clansmen having made a practice of taking the name of their chiefs, considering themselves members of their family by adoption, if not otherwise. Elsewhere than in Scotland, vassals often adopted the names of their lords, and servants those of their masters. Two or more surnames are often borne by one individual, in which case the paternal surname is placed sometimes first, sometimes last; and, in recent times, it is by the name which occurs last that the bearer of the two surnames is most frequently known.

The wife, in Britain and the United States, changes her surname to that of her husband on marriage. In continental Europe the husband often appends his wife's name to his own; and in Spain, the wife retains her own

name, while the son is at liberty to use either paternal or maternal name as he pleases, the choice usually falling on the best family.

Change of name.—Prior to the Reformation, surnames were less fixed than they have since become. Occasionally, younger sons, instead of retaining their patronymic, adopted the name of their estate or place of residence. A great matrimonial alliance was a frequent cause for adopting the patronymic of the wife. With the clergy, ordination was a common occasion of a change of name, the personal surname being exchanged for the name of the place of birth—thus, William Longe became William of Wykeham. In time of political troubles, a new name was often assumed for concealment; and in Scotland, the name of M'Gregor was proscribed 1664 by an act of the privy council. In modern times in Britian injunctions in settlements of land, and deeds of entail, are frequent grounds for a change of name, it being made a condition that the devisee or disponee shall assume a certain surname under penalty of forfeiture, a stipulation which the law recognizes as valid. In England, it was formerly usual to obtain a private act of parliament to authorize one to change his surname; and in later times authority for such a proceeding has generally been given by royal license, granted only on a reasonable ground being established for the alteration, to the satisfaction of the kings-at-arms, to whom a remit is made. It has sometimes been supposed that this royal license is necessary to legalize such a change, but the highest legal authorities have laid it down that there is nothing in the law of England to prevent any one, who may consider it for his interest so to do, to change his surname, or even his Christian name. Similarly in the United States, no legal process whatever is requisite to a change of name, since the principle is recognized that names are given not by law but by personal choice or by usage. The idea, lately prevalent to some extent, is erroneous, that an advertisement in a gazette or newspaper, or the execution of some deed, is a necessary form in order to effect a change of name. There are always great inconveniences in changing one's name, which sufficiently account for the general indisposition to do so, except from a questionable motive. As there is no law to prevent a person from changing his name, so on the other hand, there is no law to compel third parties to use the new name, and disputes and annoyances arising from such a state of things are matters of course. The change tends to a certain extent to destroy the means of identification after the lapse of years, which may or may not be the object desired. Notwithstanding these difficulties and inconveniences, there are many examples of persons who have succeeded after a few years in being generally known under a new name which has gained recognition from the public as well as from friends. The change of name, in general, produces no change whatever on the legal status. A party is equally punishable for swindling,

larceny, and other cognate offenses, whatever name he uses; and, on the other hand, if he is legatee, he is not prevented from establishing and receiving his legacy, whatever name he has adopted: in law the only requisite is identification. It follows that no person is punishable for using a new name, though it is sometimes an element for a jury to take into consideration when they are required to infer a particular motive of conduct. Though no legal process is necessary for change of name, the laws of various states have, as a public convenience for those desiring it, provided a process by which such change may receive legal sanction, through petition to the courts (New York), to the probate or surrogate's court (several states), or to the legislature (Massachusetts).

Names of Places.—These, like names of persons, belong, in great measure, to the language of past races. All over Great Britain, a very large proportion are from the Celtic names for natural features of the country. From *Gwysg, afow, tam, tav, cluyd*—in the Celtic speeches equivalent to *water* or *river*—we have Esk, Avon, Wye, Thames, Tavy, Clyde. *Pen* or *Ben*, hill, gives rise to the names of hills in England and Wales (Penrhys, Penzance), and still more in Scotland (Ben Nevis). So, also, *cwm, comb*, valley—as is Cumberland, land of valleys. The memory of the Roman invasion has been preserved in the termination *-chester* (derived from *castra*, camp) in the names of towns, e.g., Manchester. Though surnames originated often in local names, the reverse process also occurred, as where *ville, ton* or *ington, ham*, or *burgh*, has been appended to the name of the owner of the land, e.g., Charleville, Johnston, Wymondham, Edinburgh (i.e., Edwin's burgh).

See Pott's *Die Personennamen und ihre Entstehungsarten* (2 vols. 1853: 2d. ed. 1859); Miss Yonge, *History of Christian Names* (1863); Lower, *On English Surnames* (1849); Innes, *Scotch Surnames* (1860); Bardsley, *Our English Surnames* (1873); *Curiosities of Puritan Nomenclature* (1880).

NAMUR, *nā'mėr*, F. *nâ-mür':* province of Belgium on the French frontier, between Hainault and Luxembourg; about 1,400 sq.m. The principal rivers are the Meuse—entirely intersecting the province—the Sambre, and the Lesse. Namur presents generally an alternation of fruitful valleys and low hilly tracts; but in some parts, where the heights constitute offshoots of the Ardennes, and are densely wooded, they attain considerable elevation. With the exception of the land in the s.w., where are large tracts of bog and heath, the soil is extremely rich, yielding abundant crops and fine pasture. The chief products of Namur are wheat, oats, hops, oil-yielding plants, and flax. Besides iron, copper, lead, and coal mines, Namur has marble and slate quarries, and yields sulphur, alum, cadmium, alumina, flints, etc. It has good steel, iron, and smelting-works, breweries, paper-mills, etc. Namur

is divided into the three arrondissements, Namur, Dinant, and Philippeville. At the close of the 12th c., Namur was united to Luxembourg, after having existed as an independent countship more than 150 years. Toward the middle of the 13th c., it passed by purchase to the house of Flanders, which retained possession till 1420; when, on the death of Count John III. without direct heirs, the countship, which was in extreme financial embarrassment, was purchased for 132,000 gold ducats, by Philip the Good, Duke of Burgundy, and subsequently shared the fate of the other Burgundian states. Pop. (1900) 346,512.

NAMUR (Flem. *Namen*): episcopal city, capital of the province of Namur, at the confluence of the Sambre with the Meuse, 35 m. s.e. of Brussels. The cathedral, or St. Aubin's, consecrated 1772, is one of the most beautiful churches of Belgium. Namur has an academy of painting, a conservatoire for music, two public libraries, a museum, a hospital for aged paupers, a theological seminary, and 2 colleges, one conducted by Jesuits. The city was fortified from the earliest period of its history; and 1692, its defensive works were repaired and strengthened by Coehoorn, but were taken in the following year by Louis XIV. and Vauban: the latter added considerably to its original strength. The reputation of its citadel made Namur a prized stronghold in every war of later times; and after having been gallantly defended by its French conquerors, 1815, against the Prussians under Pirch, it was finally restored to the Netherlands after the battle of Waterloo, and immediately put into thorough repair. The strong fortifications were razed 1866. Namur is noted for its cutlery, its leather-works, and its iron and brass foundries. Pop. (1901) 31,610.

NA'NAK, or NA'NEK. See SIKHS.

NANAIMO, *nâ-nī'mō:* Canada, a seaport of British Columbia, on Departure bay, on the e. coast of Vancouver island, opposite Vancouver on the mainland, with which it has daily steamer service. Its harbor is deep and safe, though often closed by ice in winter. It is connected with Victoria, 60 m. s., by the Esquimault & Nanaimo railway. The coal mines at Nanaimo and in the vicinity produce more than 1,000,000 tons a year. The city is the principal Pacific coaling-station for the British navy, and exports large quantities of coal and lumber to San Francisco and other places in the United States. It also has extensive free-stone quarries, large saw-mills, banks, and daily, semi-weekly, and weekly newspapers. Pop. (1901) 6,130.

NANA SAHIB, *nâ'nâ sâ'chĭb* (real name Dundhu Punt): a Hindu, one of the leaders of the sepoy revolt of 1857: b. about 1820; said to be the son of a Brahman from the Deccan; adopted as a son 1827 by Bajee Rao,

childless ex-peishwa of Poona, thereby, according to Hindu law and custom, acquiring most of the rights of a legitimate son. He was educated as a Hindu nobleman—taught English, and brought much in contact with the European officers, in whose amusements he seemed fond of participating. A decision was, however, made by the government of Calcutta, that they should not recognize rights to pensions or indemnities acquired by adoption; in consequence, Nana Sahib was refused the continuance of a pension of eight lacs of rupees, paid to his adopted father under a treaty made 1818. This is believed to have rankled in his mind, with slights that he received from the supercilious English youth with whom he came in contact. He was allowed to retain some of the state of a native prince—a retinue of 200 soldiers, with 3 field-pieces, and a fortified residence at Bithoor, 10 m. w. of Cawnpore. When the mutiny broke out 1857, May, he offered to assist the English, but instead, treacherously placed himself at the head of the mutineers. The European troops were induced, June 25, to capitulate to Nana Sahib, who promised that they should be sent down the Ganges in safety. They got on board boats provided for them, but had no sooner done so, than two guns were unmasked, and a murderous fire was opened on them. The sepoys were ordered to shoot the men, but to spare the women and children, who, when their husbands and parents had been shot, were removed to a house in Cawnpore. July 15, Sir H. Havelock, who had advanced to their assistance from Allahabad, defeated the sepoys in two engagements, one within 8 m. of Cawnpore; and Nana Sahib next day directed that the women and children should be put to death, an order carried out with unparalleled atrocity. A long series of engagements against Nana Sahib followed, in which he was always the loser, and he was ultimately driven beyond the English frontier into Nepaul. In 1860, his death was announced, but two years later, new movements were discovered, which were attributed to him, and it is not certainly known whether he is dead or alive. Several persons have been arrested on suspicion of being Nana Sahib, but in all cases a mistake has been made. A column has been erected at Cawnpore in memory of those who perished in the massacre.

NAN'CREDE, Charles Beylard, guérard de, A.M., LL.D.: American surgeon: b. Philadelphia, 1847, Dec. 30. He was graduated at the medical school of the University of Pennsylvania in 1869; practised in Philadelphia for 20 years; in 1889 became physician, professor of surgery, and surgeon in the University Hospital, University of Michigan; served with distinguished bravery in the Santiago campaign in 1898; contributed to the *International Cyclopædia of Surgery,* to the *Cyclopædia of Diseases of the Nose and Throat,* to Parke's *Treatise on Surgery,* etc.; and wrote *Principles of Surgery* (1899).

NANCY, *năn'sĭ*, F. *nŏng-sē'*: beautiful town of France, since 1872 cap. of the dept. of Meurthe-et-Moselle, on the left bank of the river Meurthe, at the foot of wooded and vine-clad hills, 220 m. e. of Paris, on the Paris and Strasburg railway. It is divided into the old and new towns (the former irregular and with narrow streets, the latter open, regular, and handsome), and comprises also two suburbs. It contains many fine squares and imposing edifices, and owes much of its architectural ornamentation to Stanislaus Leczinsky, who, after abdicating the crown of Poland 1735, continued to reside here as Duke of Lorraine till his death 1766. His statue stands in the Place Royale, a fine square, surrounded by important public buildings, e.g., the Hôtel de Ville, theatre, etc. The gates of N. look more like triumphal arches than the ordinary entrances of a town. Among the institutions are the university-academy, the normal school, the school of medicine, the lyceum, the public library, and numerous art and scientific societies. There are cotton, woolen, and linen manufactures; but the principal industry is embroidering of cambric, muslin, and jaconet goods. N. is known to have existed in the 11th c. Two centuries later, it became cap. of the Duchy of Lorraine (q.v.). Charles the Bold was killed while besieging N. 1477. Pop. (1881) 71,991; (1891) 87,110; (1901) 102,559.

NANDU, n. *năn'dô* [Brazilian word], (*Rhea*): the American ostrich; genus of S. American birds allied to the ostrich, cassowary, and emu; and most nearly to the ostrich, from which it differs in having the feet three-toed,

Nandu (*Rhea Americana*).

each toe armed with a claw; also, in being more completely feathered on the head and neck; in having no tail; and in having the wings better developed and plumed, and terminated by a hooked spur. The wings are indeed better developed than in any other of the *Struthionidæ*, though still unfit for flight. The neck has 16 vertebræ.

There are at least three species. The best known species (*R. Americana*) is considerably smaller than the ostrich, about five ft. high. It is of uniform gray color, except on the back, which has a brown tint. The male is larger and darker colored than the female. The back and rump are furnished with long feathers, but of a more ordinary kind than those of the ostrich. This bird inhabits the great grassy plains of S. America, s. of the equator as far as to lat. 42° or 43°, abounding on the banks of the La Plata and its more southern tributaries. Its range does not extend across the Cordilleras. It is generally seen in small troops. It runs with great celerity, using its wings in aid. It is polygamous, one male securing possession of two or more females, which lay their eggs in a common nest, or drop them on the ground near the nest, to which the male rolls them. Contrary to the usual habit of birds, incubation is performed by the male. The N. is shy and wary, but is successfully hunted by the Indians, generally on horseback. The flesh of the young is fit for food. The N. is capable of being domesticated. —A smaller and more recently-discovered species (*R. Darwinii*) has light-brown plumage, each feather tipped with white: it inhabits Patagonia. A third species (*R. macrorhyncha*) is distinguished by its large bill.

NANKEEN, or NANKIN, n. *năn-kēn′* [from *Nanking*, in China]: a buff-colored cotton cloth. NANKEENS′, plu. *-kēnz′*, trousers made of nankeen.—*Nankin*, a kind of calico, was formerly exported extensively from China to Europe and America, and said to be the manufacture of Nanking; the color, yellowish-buff, being favorite. It was supposed that the Chinese held a secret for dyeing this color, which was found to be remarkably durable; but it became known that it was not an artificial color at all, the cloth being made of a colored variety of cotton, produced occasionally in China and India. Artificially dyed N. cloths now form a considerable export from England to China. The color of artificial N. is produced by an elaborate process, in which the yarn or cloth is first dipped in a saturated solution of alum; then in a decoction of oak-bark; then in a bath of lime-water; next in a bath of nitro-muriate of tin. Another, less permanent, N. dye is produced by boiling annatto in a strong solution of pearl-ashes, and diluting with water to the required tint.

NANKING, *nân-kĭng′:* city, cap. of the province of Kiangsu, and formerly cap. of China, on the Yangtse river, 90 m. from the beginning of its estuary, nearly equidistant from Canton and Peking; n. lat. 32° 40′ 40″, e. long. 118° 47′. Its name signifies Southern Capital. Since the removal of the seat of govt. to Peking (Northern Capital), it has been called by the Chinese Kiangningfu. The walls, of which only portions remain, inclosed an area nearly 20 m. in circumference, the greater part of which is entirely waste. They reached in many places a height of 70 ft., and were fully 30 ft. in thickness at the

base. According to Chinese accounts, the pop. of N. was formerly 4,000,000; but a more recent estimate made it 300,000. Of late the city has passed through so many vicissitudes, that it is impossible to ascertain its present pop. The inhabited portion of the walled area lies toward the w., several m. from the bank of the river. It is no longer possible to speak of N. in the language which former travellers used. The barbarous desolations to which it was subjected during the Tae-ping rebellion left it a sort of wreck, and one can only describe it as it was, before the victorious assault of the rebels, 1853, Mar. 19. N. is the seat of the vice-regal govt. for the provinces grouped under the name Kiangnan. Here, as elsewhere in China, there was, and again is, a Manchu garrison, or military colony, separated by a wall from that portion of the city occupied by the Chinese. Some of the finest streets of N. were in the Tartar city; several being nearly 40 ft. wide, having a space in the middle about 8 ft. in width, flagged with well-hewn blocks of blue and white marble, and on each side of this a brick pavement 14 ft. or more wide. A deep canal or ditch runs from the river directly under the walls on the w., serving to strengthen the defenses of the city on that side. The ancient palaces all have disappeared. The offices of the public functionaries were numerous, but, like the shops, presented the general features common to all Chinese towns. The objects most worthy the inspection of the traveller are found, in ruins, outside the precincts of the modern city. Among these is the summer palace of the Emperor Kienlung. It consisted of a number of one-story buildings, with spacious courts between, and flanked by smaller buildings on the sides. Enough remains to show that the workmanship was most elaborate and unique. When under cultivation, the spot must have been exceedingly beautiful. The tombs of the kings are remarkable for their sepulchral statues, which form an avenue to the graves; they consist of gigantic figures, like warriors cased in a kind of armor, standing on either side of the road, across which, at intervals, large stone tablets are extended, supported by huge blocks of stone instead of pillars. Among the buildings totally destroyed by the rebels was the far-famed Porcelain Tower. It was erected by Emperor Yungloh, to reward the kindness of his mother; the work, commenced in the 10th year of his reign (1413), was completed in 19 years. The board of works was ordered, according to the plan of the emperor, to build a tower nine stories high, the bricks and tiles to be glazed, and of 'fine colors;' and it was to be superior to all others, in order to make widely known the virtues of his mother. Its height was to be 322 ft. The ball on its spire was to be of brass, overlaid with gold, so that it might last for ever and never grow dim. From its eight hooks as many iron chains extended to the eight corners of its highest roof; and from each chain nine bells, suspended at equal distances apart; these, together with eight from the corners of each projecting roof,

amounted to 144 bells. On the outer face of each story were 16 lanterns, 128 in all; which, with 12 in the inside, made 140. It required 64 catties of oil to fill them. On the top of the highest roof were two brazen vessels, weighing together 1,200 pounds, and a brazen bowl besides, weighing 600 pounds. Encircling the spire were nine iron rings, the largest 63 ft. in circumference, the smallest 24 ft., altogether weighing nearly 5,000 lbs. In the bowl on the top were deposited one white shining pearl, one fire-averting pearl, one wind-averting pearl, one water-averting pearl, one dust-averting pearl, a lump of gold weighing 50 oz., a box of tea-leaves, 1,000 taels of silver, one lump of orpiment, altogether weighing 4,000 lbs., one precious stone-gem, 1,000 strings of copper coin, two pieces of yellow satin, and four copies of Buddhist classics. N. continued in possession of the Tae-ping rebels till the successes of the govt. troops under Major Gordon had crushed one after another all their outlying forces, when at length, 1864, July 19, the city was stormed by the imperialist soldiers under the viceroy Tseng Kwo-fan. The last blow was thus dealt to the Tae-ping rebellion, whose principal leader perished by his own hand amid the blazing ruins of the palace he had occupied for 11 years. Since its recapture, N. has resumed its former position as the seat of the vice-regal govt., but shows few signs of revival from its desolation. It has, however, been made headquarters of a large military force, and also of an arsenal—for manufacture of cannon and other warlike stores on the European model. Although specified in the Treaty of Tientsin (1858) as a river-port to be opened, little or nothing has come of this concession, and few foreigners are resident in N. Cotton grows abundantly in the neighborhood.

NANSEN, *nän'sĕn*, FRITHJOF, PH.D.: Arctic explorer: b. 1861, Christiania, Norway. He entered the Univ. of Christiania 1880 and pursued the study of zoology. In 1882 he made a voyage to the Jan Mayen and Spitzbergen seas, and the sea between Iceland and Greenland, for the purpose of studying animal life in high latitudes; in the same year was appointed curator in the Nat. History Museum at Bergen, Norway. In 1888 he took his degree at the univ.; crossed southern Greenland on snowshoes 1888–9, and was appointed curator of the Museum of Comparative Anat. at the Univ. of Christiania 1889. In 1893, having designed a vessel, the *Fram*, specially for his purpose, N. left Norway, intending to drift from the Siberian coast, across the north pole, to the coast of Greenland. Nothing was heard from him until 1896, Aug. 13, when the ship *Windward*, which had taken supplies to an expedition in Franz-Josef Land, arrived at Vardö, Norway, with N. and another member of his expedition which had sailed in the *Fram* in 1893. He had succeeded in reaching latitude 86° 15′—a point nearly 200 m. nearer the north pole than any preceding explorer had reached. Aug. 20 the *Fram* herself sailed into the port of Skerjvö.

NANTASKET, *năn-tăs'kĕt:* peninsular projection into Massachusetts Bay; abt. 5 m. in length. It is about 9 m. from Boston by water, and is largely a beach admirable for sea-bathing, and attracting crowds of visitors to its summer hotels.

NANTES, *nânts,* F. *nŏngt* (anc. *Namnetes,* or *Nannetes*): important seaport town of France, cap. of the dept. of Loire-Inférieure; on the right bank of the Loire, 30 m. from its mouth, at the confluence with it of the Erdre and the Sèvre-Nantaise, navigable streams. Besides railways, there is communication with the interior by steamers on the Loire. The natural beauties of the site have been much improved by art, and now, the noble river on which the town is placed, covered with craft of every size and description, the islands that stud its channel, the meadows that skirt its banks, and the bridges (more than 16) that cross it and its tributaries here, combine to make a highly picturesque scene.—N. contains numerous squares and churches. Several districts of the town are nearly as fine as the best districts of Paris, the old town having been pulled down between 1865 and 70. This town possesses numerous striking and beautiful buildings; chief among which are the cathedral of St. Pierre, containing the splendid monument of Francis II., last Duke of Bretagne, and of Marguerite, his wife; and the old castle, built 938, temporary residence of most of the kings of France since Charles VIII. There is a public library containing 50,000 vols.; a museum of paintings; and a museum of natural history. The quays, lined on one side with houses, and in some parts planted with trees, afford an agreeable and interesting promenade of about two miles. The most beautiful promenade, however, formed by the Cours St. Pierre and the Cours St. André, extends from the Erdre to the Loire. It is planted with four rows of trees, bordered with lines of palatial houses, and ornamented with statues. The harbor, 1,968 yards in length, is capable of accommodating more than 200 vessels. Formerly, vessels of no more than 200 tons could reach the port, all vessels of greater burden unloading at Paimbœuf, at the mouth of the river; but within recent years, much has been done by dredging for the improvement of the river-bed, and large vessels can now reach the harbor. The chief manufactures of N. are varieties of linen and cotton fabrics, calicoes, flannels; musical, mathematical, and optical instruments; refined sugar and salt, chemical products, cordage, etc. In sugar manufacture N. stands next to Paris and Marseilles. It contains tanyards, copper foundries, brandy distilleries, etc., and numerous establishments engaged in the various manufactures to which a port gives rise, as ship-building, the preparation of preserved meats, etc. In 1889 the imports were valued at $10,000,000, the exports at $2,750,000. In 1891 a ship canal, connecting N. with St. Nazaire, was opened. Pop. (1901) 132,990.

NANTES, Edict of: famous decree published in Nantes by Henri IV. of France, 1598, Apr. 13, which secured to the Prot. portion of his subjects freedom of religion. Among its more important provisions were—liberty to celebrate worship wherever Protestant communities already existed; to establish new churches, except in Paris and the surrounding district, and in the royal residences; and to maintain universities, or theological colleges, of which they had four, those at Montauban, Saumur, Montpellier, and Sedan; adherents of the Reformed faith were also to be eligible to all civil offices and dignities, but, on the other hand, they were not allowed to print books on the tenets of their religion, except in those places where it existed; and they were obliged to outwardly celebrate the festivals of the Rom. Cath. Church, and to pay tithes to its priesthood. From this period, the Reformers or Huguenots (who then counted 760 churches) had a legal existence in France, but gradually their political strength was crushed by the mighty genius of Richelieu—who, however, never dreamed of interfering with their liberty of worship. Neither did his successors, Mazarin and Colbert; but under the influence of a 'penitence,' as corrupt and sensual as the sins which occasioned it, Louis XIV., after a series of detestable *Dragonnades*, signed a decree for the revocation of the edict, 1685, Oct. 18.—The result of this despotic act was that, rather than comform to the established religion, 400,000 Protestants—among the most industrious, the most intelligent, and the most religious of the nation—quitted France, and took refuge in Great Britain, Holland, Prussia, Switzerland, and America. The loss to France was immense; the gain to other countries, no less. Composed largely of merchants, manufacturers, and skilled artisans, they carried with them their knowledge, taste, and aptitude for business. From them England, in particular, learned the art of manufacturing silk, crystal glasses, and the more delicate kinds of jewelry.

NANTICOKE, *năn'tĭ-kōk:* borough, Hanover tp., Luzerne co., Penn.; on the n. branch of the Susquehanna river; 7 m. s.w. of Wilkesbarre. It is accessible by the Central railroad of New Jersey, the North and West Branch of the Pennsylvania railroad, and the Bloomsbury division of the Delaware Lackawanna and Western railroad. There are also steamboat lines to Wilkesbarre and Plymouth, on the Susquehanna river. N. is noted for its anthracite coal mines. The principal business is conducted by the Susquehanna Coal Co., employing about 5,000 men and boys. The total output of coal is about 1,000,000 tons per annum. N. has 1 bank, 2 newspapers, water-works, public park, 14 church buildings, and 5 public-school buildings. Pop. (1890) 10,044; (1900) 12,116.

NANTUCKET, *năn-tŭk'ĕt:* island and town on the southeastern coast of Massachusetts, 18 m. s. of Cape Cod, 85 m. s.e. of Boston, 8 m. e. of the island of Martha's Vineyard. Nantucket is of somewhat triangular shape, 15 m. long and an average of 4 wide; 50 sq.m. It was bought from the Indians by Thomas Macy, 1659, for $150 and two beaver-hats. Nantucket was at one time a great seat of the whale fishery, having (1775) 150 whaling vessels; but this industry declined after 1846, and since the Civil war has become extinct. The harbor is commodious and safe. The soil is mostly sandy, and trees are very few; but the exhilarating sea-air has drawn large numbers of summer visitors. The town has banks, public halls, public schools, newspapers, public library, marine museum, and churches of various denominations. Pop. (1900) 3,006; (1910) 2,962.

NAP, n. *năp* [AS. *hnoppa;* O.Dut. *noppe,* the flock or nap of cloth: Norw. *napp,* shag, pile; *nappa,* to pluck a fowl: Dut. *noppen;* Sw. *noppa;* F. *noper,* to nip off the knots on the surface of cloth]: the woolly or smooth hairy substance on the surface of cloth; the downy substance on plants. NAP'PY, a. *-pĭ,* having much nap; in *Scot.,* elevated with liquor: N. in *Scot.* and *OE.,* strong ale. NAP'LESS, a. *-lĕs,* without nap; threadbare. NAP'PINESS, n. *-pĭ-nĕs,* abundance of nap.

NAP, n. *năp* [Ger. *knappen,* to move to and fro: Swiss, *gnappsen,* to nod: Icel. *hnipna,* to drop, to despond]: a short sleep: V. to have a short sleep; to feel drowsy. NAP'PING, imp. taking a short sleep; slumbering. TO BE CAUGHT NAPPING, to be taken by surprise. NAPPED, pp. *năpt.*

NAP, n. *năp* [AS. *cnæp* (see NAPE)]: in *OE.,* a protuberance or knob; the top of a hill.

NAPA, *nâ'pâ:* city, county-seat of Napa co., Cal.; on the Napa river, and on the Southern Pacific railroad. It is in an agricultural region in which large quantities of fruit are raised; and in the vicinity is an extensive deposit of cement rock. It was settled in 1847 and in 1863 was incorporated. The chief manufactures are gloves, woolen goods, leather, shoes, and canned goods. There is a large trade in fruit, Portland cement (made at Napa Junction), and manufactures. It has the State Hospital for the Insane. Pop. (1900) 4,036.

NAPE, n. *nāp* [AS. *cnæp,* the top of a thing, the brow of a hill: W. *cnap;* Icel. *hnappr,* a knob, a boss]: the prominent joint of the neck behind; the back of the neck.

NAPERY, n. *nā'pėr-ĭ* [OF. *naperie,* the office in a household for providing table-linen: F. *nappe,* a table-cloth: It. *nappa,* a table-cloth; *nappe,* the ribbons or tassels of a garment: mid. L. *napa,* a cloth, corrupted from L. *mappa,* a clout]: made-up linen cloth in general; table-linen.

NAPHTALI, *năf'ta-lī*, TRIBE OF: named from one of the sons of Jacob. At the period of the Exodus it was the sixth of the 12 tribes, numbering 53,400 adult males; but during the long journey in the wilderness it diminished in both actual and relative importance. It joined with the tribes of Dan and Asher in forming the 'camp of Dan,' which is said to have had an ensign in the form of a serpent, upon which was the inscription 'Return, O Jehovah! unto the many thousands of Israel.' Upon reaching the promised land the tribe numbered only 45,400 men able to bear arms. It was assigned to the n.e. portion of Palestine, one of the most beautiful and most fertile portions of the country. It made a valiant defense against the invasion of the Canaanites, and the heroism of the tribe and its great leader Barak is recorded in the Song of Deborah (Judges v.). The tribal history practically closed about B.C. 730, when Tiglath Pileser carried the people captive to Assyria; but after the captivity, the region which they had occupied was thickly settled by Jews, and this portion of Palestine was the scene of a large part of the public ministry of Christ.

NAPHTHA, n. *năp'thă* [Gr. and L. *naphtha*—from Ar. *naft*, bitumen: from *nafata*, to exude]: a variety of bitumen, thin, fluid, and highly inflammable, used largely as a solvent for caoutchouc; rock-oil (see below). NAPHTHALIC, a. *năp-thăl'ĭk*, applied to an acid obtained from naphthaline. NAPHTHALINE, n. *năp'thăl-ĭn*, or NAPH'THALENE, n. *-ēn*, a soft, grayish-white, flaky, crystalline substance found incrusting the pipes employed in the rectification of coal-tar.

NAPH'THA: term with no absolutely distinctive application in either chemistry or commerce; applied originally to a liquid, composed of hydrocarbons, exuding from the soil in certain parts of Persia. The term is now used to designate various substances. Crude Russian petroleum is often so called. The lighter products of the distillation of coal-tar and of Petroleum (q.v.) are termed coal-tar N. and petroleum N., respectively: these are hydrocarbons. Wood alcohol, or methyl alcohol, is often termed in trade wood naphtha, though containing oxygen and therefore differing from the other naphthas. In the arts, N. of the first-named type is used as a cleaning agent: sometimes on a very large scale, as in naphtha laundries, where carpets and goods of all kinds, and even furniture, are subjected to its action to remove grease and destroy moths; in blast lamps as a fuel; in special burners as a light-producer; and in gas-works to enrich gas and contribute the necessary illuminating power to water-gas. The last-named use consumes vast quantities. Water-gas works, now in operation all over the United States, employ 4 to 6 gallons of N. for every thousand cubic ft. of gas made. Its very ready vaporization and the inflammability of its vapor have occasioned many fatal accidents. N. is sometimes mixed with kerosene as an adulterant, making the fluid highly dangerous.

NAPH'THALINE GROUP or SERIES: series of organic compounds or hydrocarbons whose starting-point chemically is *Naphthaline* ($C_{20}H_8$), a substance of great interest in the history of organic chemistry, from its being that on which chiefly Laurent founded his Theory of Substitutions. It may be obtained in various ways, but is most easily and abundantly produced from the last portions of the distillate of coal-tar, which become semi-solid on cooling. Of the liquid part of this mass riddance is had by pressure, and the naphthaline is then taken up by hot alcohol, from which it is obtained in a pure state by crystallization and sublimation.

Naphthaline crystallizes in large, thin, rhombic plates, which are unctuous to the touch and have a pearly lustre. Exposed to light under a glass covering, it gradually sublimes at an ordinary temperature in splendid crystals. It has a somewhat tar-like odor, and a pungent and somewhat aromatic taste. It fuses at 174° F., and boils at 424° F Its specific gravity, in the solid state, is 1·15, and as a vapor 4·528 It is not very inflammable, and when ignited burns with a white smoky flame. It is insoluble in water, but dissolves readily in alcohol, ether, and the fixed and essential oils.

By acting on naphthaline with an excess of sulphuric acid, we obtain *sulpho-naphthalic acid* $C_{16}H_7.SO_3.H$, from which, by substitution processes, a large number of compounds are produced. With nitric acid, naphthaline yields nitro-naphthaline, $C_{10}H_7(NO_2)$, binitro-naphthaline $C_{10}H_6(NO_2)_2$, and trinitro-naphthaline $C_{10}H_5(NO_2)_3$, the group (NO_2), or its multiples, being substituted for one, two, and three equivalents of the hydrogen of the naphthaline. The final product of the prolonged action of boiling nitric acid on naphthaline is a mixture of oxalic and *naphthalic* or *phthalic acid;* the reaction being shown by the equation:

Naphthaline		Oxygen.		Oxalic Acid.		Naphthalic Acid.
$C_{10}H_8$	+	O_8	=	$C_2H_2O_4$	+	$C_8H_6O_1$

This acid is obtained also by the continued action of nitric acid upon alizarine, which is an important fact, since it indicates the connection between naphthaline and the coloring matter of madder.

Laurent has discovered a very numerous series of substitution compounds formed on the type of naphthaline, into the composition of which chlorine enters. They are of little practical importance, though their investigation has exerted a remarkable influence upon the progress of organic chemistry.

NAPIER, *nā'pĭ-ĕr:* chief port and city of the provincial dist. of Hawke's Bay, New Zealand, on the s.e. coast of North Island, about 12 m. from the s. end of the bay, about 200 m. by sea from Wellington. The town was named from Sir Charles James Napier (q.v.). There is a railway 70 m. to Makatuku. The place is thriving, though the harbor is very poor. Pop. (1881) 5,756; (1889) 8,597.

NA'PIER, Sir CHARLES, K.C.B.: English admiral: 1786, Mar. 6—1860, Nov. 6; b. at the family seat Merchiston Hall, co. of Sterling, Scotland; son of the Hon. Capt. Charles N., R. N., who was second son of Francis, fifth Lord Napier: N. was also cousin of Sir Charles James N. (q.v.) and of Sir William Francis Patrick N. At 13, he went to sea as a naval volunteer. In 1808 he received the command of the *Recruit*, 18 guns, and had his thigh broken by a bullet. He kept up a running fight, in his 18-gun brig, with the rearmost of three French line-of-battle ships, the *D'Hautpoult*, which escaped from Guadeloupe, and was thus instrumental in her capture. This obtained him a post-captaincy; but being thrown out of active service, he served ashore as a volunteer in the Peninsular army, and was wounded at Busaco. Commanding the *Thames* 1811, he inflicted an almost incredible amount of damage on the enemy in the Mediterranean, and also conducted several desperate land operations with marked success. In 1814 he was ordered to America, and led the way in the hazardous ascent and descent of the Potomac. He afterward was active in the operations against Baltimore. In 1829 he received the command of the *Galatea*, a 42-gun frigate, and was employed 'on particular service' on the coast of Portugal. Becoming acquainted with the leaders of the constitutional party, he accepted the command of the fleet of the young queen; and, by defeating the Miguelite fleet, he concluded the war, and placed Donna Maria on the throne. He was made admiral-in-chief of the Portuguese navy, and attempted to remodel it; but official and corrupt influence was too strong for him, and he returned to England. In the war between the Porte and Mehemet Ali, he organized a land force, with which he stormed Sidon, and defeated Ibrahim Pasha among the heights of Mt. Lebanon. He took part in the naval attack on Acre, and did not hesitate to disregard the orders of his chief, Admiral Stopford, when he saw the way to bring the battle to a speedy termination. He next blockaded Alexandria, and concluded a convention with Mehemet Ali. In 1847 he received the command of the Channel fleet. When the Russian war began, he was sent out to command the Baltic fleet; but the capture of Bomarsund failed to realize the high expectations formed of N.'s exploits. He twice sat in parliament, and never ceased his effort for reform in naval administration. See his *Life and Correspondence* (2 vols. Lond. 1862).

NA'PIER, Sir CHARLES JAMES, G.C.B.: 1782, Aug. 10—1853, Aug. 29; b. Whitehall, Westminster: English general, one of several brothers distinguished for bravery, three of whom—Charles, William, and George—were known in the Peninsular war as 'Wellington's colonels;' sons, by a second marriage, of Hon. Col. George Napier, grandson of Francis, fifth Lord Napier, who was fifth in descent, but through two females in succession, from John N., inventor of Logarithms. Before Charles had finished his 12th year, he received a commission in the

22d foot. His first service was in Ireland, where he assisted in putting down the rebellion. He commanded the 50th foot during the retreat on Corunna; and at the fatal battle in which Sir J. Moore fell, he was wounded in five places and made prisoner. Marshal Ney dismissed him, with permission to go to England on parol. On his return, he engaged in literary works, and even wrote a historical romance. In 1811 he returned to the Peninsula. At Coa, where he fought as a volunteer, he had two horses shot under him. At Busaco he was shot in the face, having his jaw broken and his eye injured. He recovered in time to be present at the battle of Fuentes d'Onoro and the second siege of Badajoz. After distinguishing himself in innumerable skirmishes, the daring soldier returned to England. He next took part in a fighting cruise off the Chesapeake, capturing American vessels, and making frequent descents upon the coasts. He did not return to Europe soon enough for Waterloo, but was engaged in the storming of Cambray, and accompanied the army to Paris. After the peace he was, 1818, made gov. of the island of Cephalonia, and administered its affairs with great energy and intelligence. Being, however, of an excessively combative disposition, he became embroiled with the authorities at home. In 1841 he was ordered to India to assume the command of the army at Bombay. This was the most splendid period of his career, resulting in the conquest of Scinde against terrible odds. His destruction of a fortification called Emaun Ghur, 1843, was described by the Duke of Wellington as one of the most remarkable military feats he had ever heard of. The fearful battle of Meanee followed, where N., with 1,600 English and sepoys, defeated near 30,000 Beloochees, strongly posted, with the loss of 6,000 men. The ameers surrendered, except Shere Mahomed, who brought 25,000 men into line of battle at Hyderabad. N. had only 5,000 men, but in three hours his little army gained a decisive victory. A few days afterward, N. was in the palace of the ameers, and master of Scinde. He was fortunate in possessing the entire confidence of Lord Ellenborough, who made him gov. of Scinde. His civil administration was scarcely less remarkable or less successful than his military operations. He gained the reverence of the inhabitants, but soon became engaged in an acrimonious war of dispatches with the directors. In 1847 he returned to England. After attending a series of festivals in his honor, he lived in retirement until the disasters of the last Sikh war caused the eyes of his countrymen to be turned to the hero of Scinde as the deliverer of the British Indian empire. He went to India, but found on his arrival that the Sikhs had been routed. He now turned his attention, as commander-in-chief of the army in India, to the subject of military reform. He bade a final adieu to the East 1851, and returned to his native country, where he resided until his death, at his seat, at Oaklands, near Portsmouth. He had then attained the rank of lieut.-

gen., was G.C.B., and col. of the 22d foot. It is remembered to his honor that he was the first English general who ever recorded in his dispatches the names of private soldiers who had distinguished themselves, side by side with those of officers. Brave to rashness, ready alike with tongue, pen, and sword, fiery and restless in temper, yet with a generous spirit, quarrelsome with his superiors, but beloved by his soldiers, and of a strangely wild yet noble and striking appearance, N. was one of the most remarkable men—the hero—of his time. His statue was, after his death, erected in Trafalgar Square. —The story of his *Conquest of Scinde* has been written by his brother, Lieut.Gen. Sir WILLIAM FRANCIS PATRICK N., K.C.B. (1785, Dec. 17—1860, Feb. 12), who served in the Peninsular campaign, and was engaged 1824–40 in preparing his *History of the Peninsular War*, the greatest military history in the English language. He died at Scinde House, Clapham, and was followed in a few weeks to the tomb by his wife, Lady Napier, niece of the great Charles James Fox. Her extraordinary skill in translating French documents written in cipher, and her indefatigable labors as her husband's amanuensis, are touchingly commemorated in the preface to the edition of the *History of the Peninsular War* published 1851.

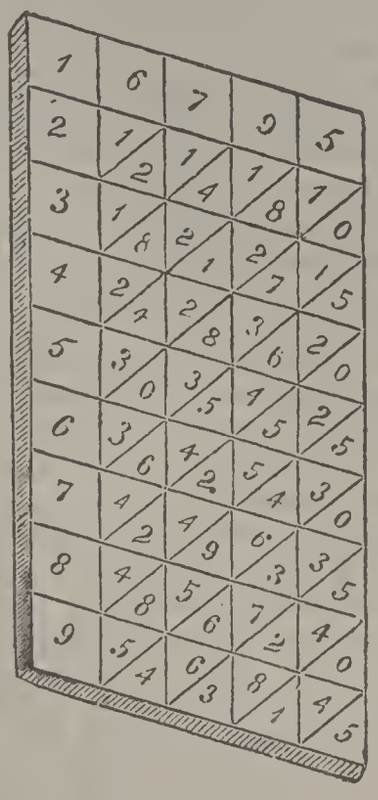
NA'PIER, JOHN, Laird of Merchiston: 1550–1617, Apr. 4; b. Merchiston Castle, near Edinburgh; of an old family. After attending the course in arts at the Univ. of St. Andrews, he travelled on the continent, probably studied at the Univ. of Paris, and returned to his native country highly informed and cultivated, for the age. Declining all civil employments, for which his many accomplishments eminently fitted him, he preferred the seclusion of a life of literary and scientific study. From this time his history is a blank till 1593, when he published his *Plaine Discouery* (or 'Interpretation') *of the whole Reuelation of St. John* (Edin. 5th ed. 4to, 1645), a work of great acuteness and ingenuity, but not in any sense a 'plaine discouery' of the Apocalypse. In this work he takes strong Prot. ground. In the dedication to King James VI., he gave his majesty some very plain advice regarding the propriety of reforming his 'house, family, and court;' and on republishing the work, he added a supplement, resolving 'certaine doubts mooved by some well-affected brethren.' About this time he seems to have given much time to the invention of warlike machines; but these inventions were never perfected, probably from motives of humanity. Like other eminent men of the time, N., though a strict Presbyterian, seems to have been a believer in astrology and divination; but there is no satisfactory proof that he ever practiced these arts. In 1596 he proposed the use of salt as a fertilizer of land, an idea which, though scouted at the time, is now generally received. Another large blank in his history here occurs, and terminates 1614, at which date he first gave to the world his famous invention of Logarithms (q.v.), in a treatise entitled *Mirifici Logarithmorum*

Canonis Descriptio (4to, Edin.). This was followed by *Rabdologiæ, seu numerationis per Virgulas libri duo* (Edin. 1617), detailing an invention for simplifying and shortening the processes of multiplication and division. See NAPIER'S BONES. He prepared a second work on Logarithms, showing their mode of construction and application, with an appendix containing several propositions of spherical trigonometry, and those formulæ now known by his name. This work was published after his death by his son Robert, under the title *Mirifici Logarithmorum Canonis Constructio, etc., quibus accessere Propositiones ad Triangula sphærica faciliore calculo resolvenda, etc.* (Edin. 1619), and along with the *Canonis Descriptio.* The latter work is included in Baron Masere's extensive collection, *Scriptores Logarithmici* (Lond. 1808). N. was the leading British man of science of his time. N.'s eldest son, Archibald, was raised to the peerage as the first Lord Napier by Charles I. 1627, and his descendants still bear the title. Two lives of N. have been published, the one by the Earl of Buchan (1787) and the other by Mark Napier (1834).

NA'PIER, The Right Hon. Sir ROBERT CORNELIS, Baron Napier of Magdala: b. Ceylon, 1810, Dec. 6. He was educated at the military college at Addiscombe. He entered the Bengal engineers 1826, served in the Sutlej campaign, was wounded while acting as chief-engineer at the siege of Moultan, and had a prominent share in the battle of Gujrat. As chief-engineer of the Punjab, with the rank of col., he greatly developed the resources of the country. During the Indian mutiny, he was chief-engineer in Sir Colin Campbell's army, and especially distinguished himself at the siege of Lucknow. For his services in the Chinese war of 1858, he was made maj.gen. and K.C.B. As commander of the expedition in Abyssinia 1868, he achieved brilliant success, both by his whole management of the short campaign and in the storming of Magdala, which ended it. On his return he received the thanks of parliament, an annuity of £2,000, and a peerage. In 1870 he was appointed commander-in-chief of the forces in India, and nominated a member of the Indian council. In 1877 he was made gov. of Gibraltar He died Jan. 14, 1890.

NA'PIER'S BONES: invention of the famous John Napier (q.v.) of Merchiston, for the purpose of performing mechanically the operations of multiplication and division. The 'bones' were narrow slips of bone, wood, ivory, or metal, about 3 inches long by 3-10ths of an inch in breadth, and divided by transverse lines into nine compartments; each of these compartments being divided into two portions by a diagonal line running from the upper right hand to the lower left hand corners. The 'bones' were divided into sets, all those of one set having the same digit occupying the top compartment, and the several multiples of that digit occupying in order the eight lower compartments; when the multiple consisted of two figures, these were placed one on each side of the

diagonal line. There was necessarily a set of bones for each digit. There was also another rod similarly divided into compartments, in which were placed the nine digits; this was called the *index-rod*. Multiplication was per-



Napier's Bones.

formed as follows: e.g., if 6795 is to be multiplied by 97834, four rods (see fig.) whose top digits were 6, 7, 9, 5 are selected, and arranged in the order of the figures in the multiplicand, and the index-rod placed alongside them, as in the figure; the several figures of the multiplier are then sought for on the index-rod, the two lines of figures opposite each figure on the index are then added together diagonally, and the five sums thus obtained are arranged as follows:

9 | 61155
7 | 47565
8 | 54360
3 | 20385
4 | 27180

664782030 = the product required.

Division is performed in an analogous manner. The contemporaneous invention of logarithms for the same purpose caused N. B. to be overlooked, and they are now little used.

NAPIFORM, a. *nā'pĭ-fawrm* [L. *napus*, a turnip: *forma*, a shape]: turnip-shaped.

NAPKIN, n. *năp'kĭn* [F. *nappe*, a table-cloth and *kin*, a dim. termination (see NAPERY)]: a cloth used for wiping the hands or mouth at table; a handkerchief. NAPKIN-RING, a ring used to inclose a napkin at table.

NAPLES, *nā'plz:* province of the kingdom of Italy. The Italian provinces (formerly kingdom) of N. and Sicily, or the Two Sicilies, occupy the s. end of the Italian peninsula, and consist of the continental territory of N. and the insular dependency of Sicily. For the distinctive physical features of N. and Sicily, see the titles of the different provinces of Italy: also SICILY. They are favored by nature with a salubrious though almost tropical climate, unbounded fertility, and teeming population; and they present natural features of rare attractiveness. The rural population are an acute, frugal, and laborious race, and form a strong contrast to their idle and debased brethren of the towns. For statistics of products, exports, and population, see ITALY: SICILY. N., in ancient times, was divided into numerous petty states independent of each other, and its inhabitants were of various races. Many of these states arose from Greek colonies, founded in the country previous to B.C. 7th c. The ancient historical importance of N. is attested by the splendor of its cities, and the warlike renown of its population. On its conquest by the Romans, the great Neapolitan cities severally adopted the municipal, federative, or colonist form of government, and gradually assimilated their laws and customs to those of their conquerors. After the downfall of the Western Empire, N. was seized by Odoacer, but soon afterward (A.D. 490) it was subjected by the Goths, and in the following c. by the Lombards, who established in it various independent duchies, Benevento, Spoleto, Salerno, Capua, etc. Most of these were overthrown by invading bands of Arabs, Saracens, and Byzantines, who were in turn expelled, and the whole country subdued by the Normans in the 11th c. The Normans subsequently erected N. and Sicily into a kingdom, and established a new political, ecclesiastical, and military system. To the Norman dynasty succeeded that of the Hohenstauren, whose rule was marked by an immense intellectual and social advancement of the people; but the vindictive enmity with which the papal see regarded this dynasty led to the invasion of N. by Charles of Anjou, who, notwithstanding the heroic resistance of King Manfred (q.v.), by the battle of Benevento (1266) annihilated the power of the Hohenstaufen. The ascendency of Charles of Anjou was further effectually secured by the treacherous defeat and decapitation (1268) of Konradin (q.v.), last male heir to the throne. By the *Sicilian Vespers* (q.v.) the island of Sicily was, however, wrested 1282 from his grasp, and became an appanage of the Spanish crown. The predominance the Neapolitan Guelph or papal party during the glorious reign of Robert I., patron of Dante and Boccaccio; the depraved libertinism of his heiress and granddaughter Joanna; the fearful ravages committed by predatory bands of German mercenaries and by the plague; the futile attempts of the Anjou sovereigns to recover Sicily, and the envenomed feuds of rival claimants to the throne: are the leading features of the history

of N. during the rule of this dynasty, which expired with the profligate Joanna II. 1435; and was followed by that of Aragon, which had ruled Sicily from the time of the Sicilian Vespers. During the tenure of the Aragon race, various unsuccessful attempts were made by the House of Anjou to recover their lost sovereignty; and the country, especially near the coast, was repeatedly ravaged by the Turks (1480). In fact, after the death of Alfonso, the first ruler of the Aragon dynasty, the country groaned under a load of misery. Wars, defensive and offensive, were incessant, the country was impoverished, and a conspiracy of the nobles to remedy the condition of affairs was productive of most lamentable results, both to the conspirators themselves, and to the other influential Neapolitan families. In 1495, Charles VIII. invaded N., and though he was compelled to withdraw in the same year, his successor, Louis XII., with the treacherous assistance of Ferdinand (the Catholic) of Spain, succeeded in conquering the country 1501. Two years afterward, the Spaniards under Gonsalvo di Cordova (q.v.) drove out the French, and the country from this time became a province of Spain. Sicily had previously (1479) been annexed to the same kingdom. During the two centuries of Spanish rule in N., the parliaments which had existed from the time of the Normans fell into desuetude, the exercise of supreme authority devolved on viceroys, and to their ignorance, rapacity, and oppressive administration may be ascribed the unexampled misery and abasement of this period. In the words of Sismondi, 'no tax was imposed save with the apparent object of crushing commerce or destroying agriculture, and the viceregal palace and the tribunals of justice became public offices in which the highest dignities and most sacred interests of the state were openly bartered to the wealthiest bidder.' During the Spanish rule, a formidable rebellion took place 1647, headed first by Masaniello (q.v.), afterward by Henry V., Duke of Guise; the whole population of the province renounced their allegiance to their Spanish sovereigns, but the arrival of a new viceroy, who was equal to the occasion, resulted in the capture of the Duke of Guise and the resubjugation of the country. At length, during the war of the *Spanish Succession* (q.v.), N. was wrested from Spain by Austria 1707, and Sicily in the following year; but while N. was secured to Austria by the treaties of Utrecht (1713) and Rastadt (1714) Sicily was transferred to Savoy by the former treaty. In 1720, however, both Sicilies were reunited under the Austrian rule, and in 1735 were given to Don Carlos, third son of Philip V. of Spain, who ascended the throne as Charles I., and founded the Bourbon dynasty. His reign was marked by equity and moderation; great reforms were effected in the administration of public affairs; science and literature were encouraged, and splendid works of public utility were erected throughout the kingdom. It was during his reign that Pompeii and Herculaneum were discovered. His

successor, Ferdinand IV., followed in the course of legislative reform; but on the proclamation of the French Republic (1789), his states were invaded by a French army, and the kingdom of N. was erected into the Parthenopean Republic (1799). Ferdinand retired with his court to Sicily, and for a brief period enjoyed the restoration of his sovereign rights in N.; but a second invasion by Napoleon (1806) ended in his proclamation of his brother, Joseph Bonaparte, as king of N.; and when the latter assumed the Spanish crown 1808, that of N. was awarded to Joachim Murat, brother-in-law of Napoleon. On the defeat and execution of Murat 1815, the Bourbon monarch, Ferdinand IV., was restored. The liberal insurrectionary movements in N. 1821 and 30 were the forerunners of the revolution of 1848; and in each case the party of progress was combated by the respective kings with ruthless severity, and perfidious concessions, to be cancelled and avenged with sanguinary fury when the disarmed and credulous patriots were at the mercy of the sovereigns. For the ultimate overthrow of the Bourbon dynasty in the kingdom of N., and its subsequent annexation to the kingdom of Italy under King Victor Emmanuel, see GARIBALDI: also FERDINAND II.: ITALY. For the history of Sicily previous to its annexation to and during its various separations from N., see SICILY.

NA'PLES (Ital. *Napoli*, anc. *Neapolis*): largest city of Italy, cap. of a province; formerly cap. of the kingdom of the Two Sicilies; built partly at the base, partly on the slopes of two crescent-shaped acclivities on the famous Bay of N. Pop. (1881) 463,172; (1901) 563,540. The wonderful beauty of the site and of the surrounding prospect, the delicious softness of the climate, and the clear atmosphere, make N. famed among the cities of the world. It is one of the chief centres of commerce and industry of Italy, and one of the principal stations of Mediterranean steam-navigation.

The public buildings of N. are numerous and grand, but are devoid of architectural symmetry in consequence of the antiquity of their origin and the irregularity of their site. Many of the old streets are paved with lava, and inconveniently narrow, with houses of great height. The modern streets, however, are spacious and splendid. The city is divided into the Old and the New Town, or the East and West Crescents, by a lesser range of heights —viz., the Capodemonte, the St. Elmo, and the Pizzofalcone, terminating in the rocky promontory called the Castel dell' Ovo. In 1868, a land-slip destroyed a number of houses at the foot of Pizzofalcone. The eastern division of N. is the most ancient and the most densely peopled; it contains the principal public structures, and is intersected by the splendid Via or Street di Toledo. The western, or modern section, contains the famous Riviera di Chiaja, or the Quay, a fine road running along the bay in a curved course of three miles, flanked on the right by a row of palaces, and bordered on the left by the beautiful pleasure-grounds of the Villa Reale, which

lie between it and the sea, and of which the natural beauty is heightened by the interspersion of temples, fountains, and statuary groups amidst the acacia, myrtle, and orange groves. The public squares, or *larghi*, of N. are adorned with fountains and obelisks; and within the precincts of the city, are several highly-prized springs both of fresh and of mineral waters. The fortified castles are numerous. Among the principal are the Castel Nuovo, called the Bastile of Naples, somewhat similar to the Tower of London, and adorned with a fine triumphal arch, erected in honor of Alfonso of Aragon; the Castel dell' Ovo, so called from its oval or egg shape, standing on a promontory, and connected by a bridge with the mainland; the Castel Sant' Elmo, commanding a magnificent view from its ramparts, and formerly of immense strength; and the dismantled Castel del Carmine. The Rom. Cath. churches and chapels number more than 300, and many are rich in architectural and archæological interest, though generally they are notable more for interior decoration than for architectural excellence. The cathedral dedicated to St. Gennaro (Januarius; q.v.) contains the celebrated phials in which the liquefaction of St. Gennaro's blood is alleged to take place on two annual festivals; it contains also the tombs of Charles of Anjou and of Pope Innocent IV., besides numerous fine paintings and statues. The educational institutions of N. comprise famous schools of surgery, law, and general science. A magnificent aquarium has been opened since 1871, with a zoological laboratory in which many distinguished foreign naturalists are at work. The philanthropical establishments are on an immense scale, and are richly endowed. There are several theatres in the city, of which that of *San Carlo* (devoted to the Opera) is one of the largest and most celebrated in Italy; but the characteristic theatre of N. is the *Teatro di San Carlino*, headquarters of *Pulcinella* ('the Italian *Punch*'). There are four grand public libraries; and in the Museo Borbonico, N. possesses an unrivalled collection of art, comprising frescoes, paintings, mosaics, sculptures, bronzes, antiquities, and the renowned collection of precious objects excavated from Herculaneum and Pompeii.

The environs of N., apart from their extreme beauty of scenery, are highly interesting. The locality which contains the tomb of Virgil, the disinterred towns of Herculaneum and Pompeii, Vesuvius (from an eruption of which N. suffered 1872), and the Roman remains, must possess inexhaustible interest for scientific, antiquarian, and classical investigators. The modern villas of N. are splendid and luxurious. One of the most striking features of N. is its unique population and the universal publicity in which life is passed. The inhabitants are ever swarming in the thoroughfares, where an incessant throng of vendors, purchasers, and idlers intermingle with asses, mules, hand-carts, and conveyances, dazzling the eye with their brilliant variety of costume, and the pantomimic expressiveness of their frantic ges-

tures and attitudes; while the ear is stunned by the shrill conflicting cries of the ambulatory vendors of every conceivable commodity, by the piercing notes of the improvisatore's song, and the uproarious hilarity, and high-pitched patois of the countless masses, whose sole abode appears to strangers to be the thronged public squares and streets. The popular language of N., a corrupt dialect of Italian and Spanish, is in prevalent use among all classes of society; it lends itself especially to the satirical and facetious squibs and compositions in which the Neapolitans excel. The popular Neapolitan songs in the native patois are exquisitely naïve and expressive in sentiment, and are set to fascinating melodies (see LAZZARONI). In 1884 a French company finished a water system which brings daily 100,000 cubic metres of water a distance of 70 kilometres. Dr. Dohrn's zoological station here has become famous.

The name Naples (Gr. *Neapolis*, new city) had reference to an older town in the neighborhood, called originally Parthenope, and, after the foundation of the new town, Palæpolis (old town), which was probably on the ridge called Posilipo, that separates the Bay of Pozzuoli or Baiæ from that of Naples. Both towns were Greek settlements, apparently colonies from the neighboring Cumæ, joined by immigrants direct from Greece. B.C., 327 Palæpolis was besieged and taken by the Romans, and thenceforth disappears from history; Neapolis submitted without resistance, and became a favored and faithful ally, or rather provincial city of Rome. It long, however, retained its purely Greek character and institutions; and there is evidence that the Greek language continued to be used, even in public documents, as late as the 2d c. of the Christian era. N. was a flourishing and populous city during the Roman empire; and, notwithstanding the vicissitudes of the Gothic conquest of Italy, and the reconquests by the Byzantine emperors, it continued to be one of the most important and opulent places in Italy. About the 8th c., it threw off allegiance to the Byzantine emperors, remained independent till it fell into the hands of the Normans 1140, and became the cap. of the kingdom of Naples. Its history in modern times is scarcely separable from the history of Italy (q.v.): see also NAPLES (Province).

NA'PLES, BAY OF: indentation of the Mediterranean Sea on the s.w. coast of Italy, opposite the city of Naples; 20 m. wide from Cape Miseno on the n.w. to Cape Campanella on the s.e., and from this line extends inland about ten m. The scenery is very beautiful. On the shores are many towns and villages; the prospect is bounded e. by Mt. Vesuvius, and on the outskirts of the bay are the islands of Ischia and Capri.

NAPLES YELLOW, n. *nā'plz yĕl'lō* [*Naples*, in Italy, and Eng. *yellow*]: pigment of rich, opaque, golden hue, used by artists. It consists of antimoniate of lead, and is obtained by the direct combination of antimonic acid and oxide of lead under the influence of heat.

NAPOLEON, n. *na-pō′le-on* [after *Napoleon* I.]: French gold coin of 20 francs, about 16 shillings sterling = $3.86.

NAPOLEON I., *na-pō′le-on*, F. *nâ-pō-lā-ōng′* (NAPOLEON BONAPARTE, *bō′na-pârt*, It. *bō-nâ-pâr′tā*), Emperor of the French: 1769, Aug. 15—1821, May 5 (first consul in the Republic 1799–1804, emperor 1804–14); b. Ajaccio, in the island of Corsica. (For an account of the family to which he belonged, see BONAPARTE, FAMILY OF.) At the age of ten, he entered the Military School at Brienne, as a king's pensioner. Here he remained five years and a half, showing great aptitude and predilection for mathematics, history, and geography, and indifference to merely verbal and literary studies. His manner was sombre and taciturn, but as Bourrienne (who was his schoolfellow) says, this arose chiefly from the circumstance that he was a foreigner, poor and unaccustomed to the use of French, which he learned first at Brienne. 1784, Oct., he proceeded to the Military School to complete his studies for the army, and in less than a year obtained his commission as sub-lieut. in the artillery regt. *de la Fère*. When the Revolution broke out, N. was in garrison at Valence. He took the popular side, but in a quiet and undemonstrative way, for he did not love the boisterous enthusiasm of unmanageable mobs. When, 1792, the armed rabble of Paris poured out to the Tuileries on the famous June 20, N., who was then in the city, followed the 'despicable wretches' (as he called them), with his friend Bourrienne; he saw them force the poor king to stick the red cap on his head, and smile fatuously from the windows of his palace. 'It is all over henceforth with that man,' said the young officer, and returned to Paris graver and more thoughtful than Bourrienne had ever seen him. After the scenes of Aug. 10, he left for Corsica, where Gen. Paoli held chief command. The excesses of the Septembrists and Terrorists, however, induced Paoli to throw off his allegiance to the Convention, and to seek the assistance of England. N. was active but unsuccessful in his opposition to the designs of the general, and found it necessary, with his relatives, to flee from the island.

He now petitioned the Convention for employment, and was sent to assist in the reduction of Toulon, with the rank of lieut.col. of artillery. The city was captured (1793, Dec. 19) entirely through the strategic genius of N.; and in the following Feb. he was raised to the rank of brig.gen., and placed at the head of the artillery in the army of the south. Later in the year, he was sent to Genoa, to examine the fortifications of the city, and to discover the political disposition of the inhabitants. In the beginning of 1795, he was again in Paris seeking active employment, and thinking, from sheer ennui, of transferring his services to the sultan of Turkey. The Convention was now in great peril, on account of the mutinous spirit of the arrondissements of the capital, and, on the suggestion of Barras, Carnot, Tallien, and

others, N. was made commander of the troops provided for its defense. On the 13th Vendémiaire (1795, Oct. 4), the national guard, 30,000 strong, attempted to force its way into the Tuileries, where the convention was sitting, but was routed and dispersed by a terrible cannonade directed by the young artillery officer. N. was immediately appointed to the command of the army of the interior. About this time, he made the acquaintance of Josephine Beauharnais, whom he frequently met at the house of Madame Tallien. Captivated by her elegant manners and amiable disposition, he proposed marriage to the graceful widow, and was accepted. The wedding took place 1796, Mar. 9. A few days before, he had been appointed to the supreme command of the army of Italy, and he was obliged to leave his bride almost at the altar. On his arrival, he found the troops in a wretched condition. He had only 36,000 available men, and even these were half-starved, and only half-clothed, to oppose to an Austrian and Piedmontese force of 75,000. Yet he was not afraid to undertake the conquest of Upper Italy. Leaving Nice at the close of March, he won his first victory over the Austrians at Montenotte (April 11), which opened the Apennines for him; three days later, a second success at Millesimo separated the allied armies; and, finally, his victory at Mondovi (Apr. 22) compelled Sardinia to implore peace. He now hoped to crush utterly the Austrian army under Beaulieu, and at the battle of Lodi (May 10) nearly accomplished it. His opponent did not venture to defend the line of the Mincio, but hastily throwing a garrison into the city of Mantua, retreated into the Tyrol. N. immediately entered Milan, and took possession besides of all the principal cities of Lombardy. Now began in n. and central Italy that system of enormous and unscrupulous plunder which gives something of a barbaric character to the conquests of the French. The Directory gave orders that N. should levy contributions from all the states which he had gratuitously freed, and according to his own account, he sent to France not less than 50,000,000 francs. His officers and commissaries actually seized whatever they wished, provisions, horses, and all manner of stores; and because Pavia ventured to make some slight resistance to the shameful extortions of the republicans, N. gave it up to havoc for 24 hours! A body of savans (including Monge, Berthollet, and others) were dispatched to Italy to superintend the spoliation of its artistic treasures; and both then and in the subsequent Italian campaigns, pictures, statues, vases, and MSS. were carried off in great numbers, to gratify the vanity of the Parisian sight-seers. In this way, Lombardy, Parma, Modena, Bologna, and the States of the Church were savagely harried before the end of June—Pope Pius VI., in particular, being forced to submit to conditions of extreme rigor.

Meanwhile, Austria had resolved to make another effort for the recovery of Lombardy. About the close

NAPOLEON BONAPARTE.
After a Painting by Paul Delaroche.

of July, Marshal Wurmser advanced from Trent at the head of 60,000 men, and forced Napoleon to raise the siege of Mantua, but was himself defeated, with the loss of all his cannon, near Castiglione (1796, Aug. 5), and again at Bassano (Sep. 8); in consequence of which, he was driven to take refuge within the fortress of Mantua with 16,000 troops—the shattered remains of his 60,000. Austria, however, was not disheartened. A *third* army was dispatched in two divisions: 30,000 from Carinthia, under Marshal Alvinzi; and 20,000 from the Tyrol, under Gen. Davidowich. This was a terrible campaign for N.; his veterans were exhausted, his new supports had not arrived; he himself was despondent, while the Austrians were fresh and hopeful. At first, the latter were completely successful; but the great victory of Arcola, won by N. (1796, Nov. 17) after three days' fierce fighting, in which he lost nearly all his general officers, decided the fate of the campaign. His dispatches to the Directory, penned about this period, show how thoroughly he apprehended the state of parties in Italy, and also how utterly indifferent he was to any considerations beyond those that advanced the interests of France. 1797, Jan., a fourth campaign was commenced by Austria. At the head of 50,000 fresh troops, Alvinzi descended from the Tyrol, but was completely routed by N. at Rivoli, Jan. 14; and not long after, Wurmser was starved into surrender at Mantua. A *fifth* army was assembled on the Tagliamento, under the command of the archduke Charles: but his troops were mainly raw recruits, while those of N. were inured to war, and flushed with innumerable triumphs. In consequence, he was forced to retreat, which, however, he did slowly and in good order, hoping to surround his opponent in the interior of the country. N.'s design was to march on Vienna, and he actually penetrated as far as Judenburg, in Upper Styria, only eight days' march from the capital. The Austrian govt. at length was seized with alarm, and made overtures of peace; and finally, 1797, Oct. 17, the famous treaty of Campo-formio was signed, by which Austria ceded the Netherlands, Lombardy, and some smaller territories to France; while obtaining in return, through disgraceful treachery on the part of the victor, possession of the province of Venice. It is generally said that N.'s military genius was never more brilliantly displayed than in these early Italian campaigns. In ingenuity of plan, celerity of movement, audacity of assault, he far outshines all his adversaries; it is, moreover, but just to him to state further, that he made desperate efforts to stop the excesses of the most scoundrelly commissariat in Europe; and that while in the main he showed no hesitation in carrying out the brigand-like orders of the Directory, he does not appear to have appropriated a single penny to himself. It was power, not gold, that he cared for.

1797, Dec., N. returned to Paris, where he was received with the utmost enthusiasm. At this time, there

was much talk, and probably some vague design, on the part of the Directory, of invading England, and N. was appointed commander-in-chief of the invading army. It has been thought, however, that this was merely a feint to mask the real design of the Directory, viz., the invasion of Egypt, as perhaps a preliminary step to the conquest of British India. Be that as it may, an expedition against Egypt was resolved on by the Directory; and 1798, May 19, N. sailed from Toulon, with a fleet carrying 30,000 soldiers, and a body of savans to investigate the antiquities of the country. He reached Alexandria June 29. At this moment, France was at peace with Turkey; the invasion of Egypt, a Turkish dependency, was therefore utterly unjustifiable, and reminds us not of European warfare, but rather of the irruption of a horde of barbaric Tartars. N. having landed his troops, captured Alexandria, and marched on Cairo. The Mamalukes prepared resistance; but July 21, at the battle of the Pyramids, they were completely defeated, and the French became, in a surface-way, masters of Egypt. N. then entered the capital, and immediately began to reorganize the civil and military administration of the country—for he took a great, but also an ostentatious pleasure in this sort of work. Meanwhile, Aug. 2, Nelson had utterly destroyed the French fleet in Aboukir Bay, and so cut off N. from communication with Europe. A month later, the sultan declared war against him. This was followed by disturbances in Cairo, which were suppressed only by horrible massacres. It was obviously necessary that N. should go somewhere else. He resolved to meet the Turkish forces assembling in Syria; and 1799, Feb., crossed the desert at the head of 10,000 men, stormed Jaffa Mar. 7, after a heroic resistance on the part of the Turks; marched n. by the coast, and reached Acre on the 17th. Here his career of victory was stopped. All his efforts to capture Acre were foiled through the desperate and obstinate valor of old Djezzar Pasha (q.v.), assisted by Sir Sidney Smith, with a small body of English sailors and marines. May 21, he commenced his retreat to Egypt, leaving the whole country on fire behind him, and re-entered Cairo June 14. During his absence the savans made their valuable researches among the monuments of Upper Egypt. About the middle of July, the sultan landed a force of 18,000 men at Aboukir, who were attacked by N. on the 25th, and routed with immense slaughter. But the position of the victor was far from comfortable, and he therefore resolved to return to France—especially as news had come to him of disasters in Italy and confusions in Paris. Aug. 23, he sailed from Alexandria, leaving his army behind him under the command of Kleber; and after narrowly escaping capture by the English fleet, landed near Frejus, 1799, Oct. 9. He hastened to Paris, soon mastered the state of affairs, threw himself into the party of Sieyès, and overthrew the Directory (q.v.) on the famous 18th Brumaire. A new constitution was drawn up, chiefly

by Sieyès, under which N. became First Consul, with the power of appointing to all public offices, of proposing all public measures in peace or war, and the entire command of all administrative affairs civil and military. In a word, he was ruler of France; and though far from satisfied with the clumsy machinery of Sieyès's plan he could afford to wait the future. In 1800, about the end of January, he took up his residence in the Tuileries. The country was tired of revolutions, discords, and confusions; it was proud of its young leader, who seemed inspired but not enslaved by the ideas of his age, and who knew how to enforce obedience, as well to panegyrize principles. It therefore regarded his assumption of sovereign power with positive satisfaction. N. displayed extraordinary vigor as an administrator, recruited the national treasury by various sagacious expedients, repealed the more violent laws passed during the Revolution, such as punishment for matters of opinion, reopened the churches, and terminated by policy the Vendean struggle. But he knew well that his genius was essentially military, and that his most dazzling and effective triumphs were those won on the battle-field. France was still at war with Austria, and he resolved to renew the glories of his first Italian campaigns. Leaving Moreau in command of the army of the Rhine, he assembled, with wonderful rapidity and secrecy, an army of 36,000 men on the shores of the Lake of Geneva, and 1800, May 13, began his magnificent and daring march across the Alps. Almost before the Austrian general, Melas, was aware, N. had entered Milan (June 2). Twelve days afterward, was fought the fiercely contested yet decisive battle of Marengo, which compelled the Austrians to resign Piedmont with all its fortresses, and (for the second time) Lombardy to the French. Later in the year, hostilities were recommenced; but the Austrians, beaten by Moreau in Germany (at Hohenlinden, etc.), and by N. in Italy, were at last forced to make peace; and 1801, Feb. 9, signed the treaty of Lunéville, based mainly on that of Campo-formio. In the course of the same year, France and England also made peace, but the treaty (known as that of Amiens) was not definitively signed till 1802, Mar. 27. Not less important for the consolidation of affairs in France was the famous *Concordat* (q.v.) between N. and Pope Pius VII., also concluded 1801. In 1802, Jan., N. became President of the Cisalpine Republic; and Aug. 2, was declared Consul for life by a decree of the French senate.

Meanwhile, N. was busy superintending the drawing up of a code of civil laws for France. He assembled the first lawyers in the nation, under the presidency of Cambacérès, and frequently took part in their deliberations; the results of their labors were the *Code Civil des Français*, *Code de Procédure*, *Code Penal*, and *Code d'Instruction Criminelle*, besides commercial and military codes, all of which often are loosely grouped under the name *Code Napoléon*. The first of these is an admirable pro-

duction, and is in force to the present day. Considerable attention was given also to such branches of education as were likely to promote efficiency in the public service. Mathematics, physical science in all its departments, engineering, etc., were as vigorously encouraged as philosophy, ethics, and political speculation were discouraged. But the best proof that N. wanted not an educated people, but only active and expert tools and agents, was the indifference that he manifested to primary and elementary education. In a population of 32,000,000, the number of pupils under ten years is given by Fourcroy at only 75,000! The internal government was the acme of despotic centralization. N. appointed all prefects of departments, and all mayors of cities, so that not a vestige of provincial or municipal freedom remained. He ruled France as he ruled the army of France, and was already an emperor in almost everything but the name.

Peace between France and England did not last long. N.'s policy in Italy irritated the British govt., and as remonstrances were ineffectual, war was declared against France, 1803, May 18. The English fleet scoured the seas, paralyzing the commerce of France; while N. threatened to invade England, and assembled a large army at Boulogne. So utterly did he misconceive the character and condition of Englishmen, that he felt sure (according to his own statement) that he should be welcomed as a liberator by the people! While these warlike preparations were going on, occurred the dangerous conspiracy of the Chouan chief, George Cadoudal (q.v.), Pichegru (q.v.), Moreau (q.v.), and others. Its discovery (1804, Feb.) alarmed N. excessively, and led to what has been considered one of the blackest deeds in his career—the murder of the Duke d'Enghien (q.v.) Mar. 20 following. He now appears to have felt it necessary to assume the title Emperor. France, he alleged, wanted an empire as a symbol of permanent security. An appeal was made to the nation. More than 3,000,000 votes were in favor of the proposed change in the form of government; only 3,000 or 4,000 against it. But where there is no municipal freedom, one does not know what value to put on votes. May 18, N. assumed at St. Cloud the title Emperor, and was crowned by, or rather in the presence of, the pope (for N. rudely crowned himself) 1804, Dec. 2. In the following summer (1805, May 26), in the great cathedral of Milan, he was crowned also King of Italy; and Eugène Beauharnais, his stepson, was appointed to the office of viceroy.

This policy of aggrandizement, which set at naught the conditions of the treaty of Lunéville, alarmed the other nations of Europe, especially Austria, which saw her Italian possessions seriously threatened. In 1805 a coalition was formed between England, Russia, Austria, and Sweden, mainly through the persevering policy of England; and war again broke out in September. N. acted with amazing celerity. Concentrating his widely-

scattered forces at Mainz, he marched at once across Bavaria, compelled Gen. Mack to capitulate at Ulm with 20,000 men (Oct. 17); and entered the capital of Austria Nov. 13. France was electrified; the rest of Europe was thunder-struck. But a more glorious triumph was yet to come. The Russian army was already in Moravia, under the immediate command of Emperor Alexander I., and was there being joined by the scattered Austrian troops. N. did not lose a moment. Hurrying north, he gave battle to the allies at Austerlitz, Dec. 2. The contest was tremendous; but the victory was complete. N.'s opponents were utterly crushed; and next day the Austrian emperor sought an interview, and sued for peace. A treaty was signed at Presburg, 1805, Dec. 26, by which Austria ceded to France all her Italian and Adriatic provinces; other changes effected by it were, the dissolution of the old German empire, and the formation of the *Confederation of the Rhine* (q.v.).

1806, Feb., a French army conquered Naples, and the crown was conferred by N. on his brother Joseph; in the following June, another brother, Louis, was made king of Holland. Prussia, now when it was too late, assumed a hostile attitude. She had hung off partly through fear and partly through selfishness, from the great anti-French coalition of the previous year, and now, when circumstances were almost hopelessly adverse, she madly rushed against her colossal enemy. Austria, with more magnanimity than prudence, lent her help, but the star of N. was still in the ascendant. The battle of Jena (Oct. 14) absolutely annihilated the power of Prussia; five days later, N. entered Berlin, whence he issued (Nov. 21) his celebrated 'Decrees' against British commerce, hoping to ruin her by shutting out her ships from every harbor in Europe. His expectations, it need hardly be said, were disappointed. His policy nearly ruined the commerce of his own and other countries, but it only increased the prosperity of England. Her fleets and cruisers swept the seas; nothing could be got from the colonies save through her, and the merchants of the continent were obliged—in order to supply their customers as before—to let her carry on a vast contraband traffic. See ORDERS IN COUNCIL.

After the capture of Berlin, N. proceeded northward to encounter the Russians, who were advancing to the help of Prussia. On his way, he summoned Poland to rise, but with only partial success. At Pultusk (1806, Dec. 28), and at Eylau (1807, Feb 8), the French were beaten and driven back on the line of the Vistula; but after some months, he received heavy reinforcements, and June 13, fought and won the great battle of Friedland, which led to the treaty of Tilsit, signed July 7. By a secret article of this treaty, Russia promised to close her ports to British vessels. It is noticeable that, as the military triumphs of N. increased, the civil and political liberties of his subjects diminished. Consequent on the treaty of Tilsit, a decree of the imperial

senate abolished the tribunate—the only political body in France that preserved the semblance of national self-government. In Aug., N. created his brother Jerome sovereign of Westphalia—having patched up a kingdom for him in his usual unscrupulous way—and soon afterward entered on a war with Portugal—the beginning of the great Peninsular War. The occasion of the war was the refusal of the Prince-regent of Portugal to carry out the Berlin decree in regard to British shipping. 1808, Mar., occurred that extraordinary instance of trepanning at Bayonne, by which the whole royal family of Spain fell into the hands of N.; and in the following July, his 'dearly beloved brother' Joseph was ordered to exchange the throne of Naples for the 'crowns of Spain and the Indies.' His successor was the 'handsome swordsman' (*beau sabreur*), Joachim Murat. Spain rose in insurrection, and an English force, under Sir John Moore, was dispatched to its assistance. N. invaded the country about the close of Oct., defeated the Spanish forces, and captured Madrid (Dec. 4). But his presence was urgently needed elsewhere, and he was forced to let Soult and other generals conduct the war in the Peninsula. Austria, again irritated and alarmed at his aggressive policy, especially in Italy (where he had seized Tuscany and the States of the Church), once more prepared for war, which broke out in the spring of 1809. Her army of Germany, commanded by the archduke Charles, was in splendid condition; but still fortune was adverse. N. hurried into Bavaria, routed the archduke at Eckmühl (1809, Apr. 22), compelled him to retreat into Bohemia; and May 12, entered Vienna the second time. But the struggle was not over. The archduke rallied his scattered forces, worsted N. in the terrible conflicts of Aspern and Essling (May 21, 22), and drove him to take refuge for a time on an island of the Danube. The battle of Wagram (July 6), however, once more prostrated, or at least intimidated Austria; and 1809, Oct. 14, she signed the peace of Schönbrunn.

N. appears to have then come to the conclusion, that he could put a stop to the hostile machinations of the old legitimate dynasties only by intermarrying with some one of them. Besides, his wife Josephine had no children—and he was ambitious of perpetuating his power in his family. With that callousness to everything except his own interests, which is a prominent feature of his character, he immediately proceeded to divorce her. The act of divorcement was solemnly registered 1809, Dec. 16. Less than three months afterward, he married Maria Louisa, Archduchess of Austria. He was now at the zenith of his power, and so, according to the old Greek belief, Nemesis was on his track. Some British writers attribute his ruin to that outrage on civilization—the Berlin Decrees; and, indeed, if these were not its cause they seem at least to have supplied its occasion. Russia found it impossible to carry out

the Berlin Decrees, without permanent injury to her great landowners; Sweden and other countries were in a similar predicament. This led to evasions of the decree, and these, again, involved Russia particularly in further complications, until finally, 1812, May, N. declared war against her; and in spite of the advice of his most prudent counselors, resolved to invade the country. The dreadful history of the Russian campaign is familiar. N., wringing contingents from all his allies—Germans, Austrians, Italians, Poles, and Swiss—concentrated between the Vistula and the Niemen an army of half a million of men. The vast horde crossed the latter river (June 24, 25) in three divisions, captured Wilna (June 28), and ravaged Lithuania. The Russian generals retreated before the invading host, deliberately wasting the country, and carrying off the supplies, but avoiding, as far as possible, all engagements—their design being to surround N. in the heart of the country, and by the help of famine and the rigors of a northern winter, to annihilate him in his hour of weakness. N. followed up the retreating foe with reckless resolution. He risked everything on the chance of striking some overwhelming blow. The horrors of his march—in Lithuania alone, 100,000 dropped off (dead, sick, or captured. by the swarms of Cossacks that hung upon his flanks)—are too familiar to require description. When he reached Smolensk (Aug. 16), the Russians had just left it—on fire! About three weeks later, he made up on the enemy at Borodino, where an obstinate and bloody battle was fought (Sep. 7). The French remained in possession of the field, but of nothing else. A week later, N. entered Moscow, hoping to find rest for a time in the ancient metropolis of the country. But the city was deserted by its inhabitants; and Sep. 16, a fire broke out, which raged till the 19th, and left Moscow a heap of ruins. After five weeks' stay, N. was obliged to commence his retreat (Oct. 19). His army was reduced to 120,000 men. The winter set in much earlier than usual, and he had to return through the very districts which had been wasted on his advance. When he left Smolensk (Nov. 14), he had only 40,000 fighting-men; when he crossed the Beresina (Nov. 26, 27), he had not more than 25,000. With the excuse—which was in itself no doubt true—that his presence was urgently needed in France, he now abandoned the miserable remains of his army; and, Dec. 5, leaving Murat in command, set out in a sledge for Paris, where he arrived on the 18th. He instantly set about a fresh conscription; and in the spring of 1813, marched into Germany at the head of 350,000 men; but the Russian campaign had broken the spell of terror which his name had till then exercised. The spirit of all Europe was thoroughly roused. A conviction was—somewhat unconsciously—seizing every mind (at the close of the campaign of 1814, even France shared it), that the world had had 'enough of Bonaparte' (*assez de Bonaparte*). Prussia, in particular, was burning to wipe out the disgrace of Jena, and

all the bitter humiliations to which she had been subsequently subjected. The victories of the British in Spain, the fame of which was spreading all over the continent, proved to her also that French soldiers *could* be beaten, not once or twice only, but through whole campaigns. An alliance was formed between the king of Prussia and Emperor Alexander. At first, Austria remained neutral, but afterward joined the coalition. N.'s military genius, it has been often remarked, never showed to greater advantage than in this and the next campaign, which cost him his crown and his liberty. He was for some months successful in winning battles—at Lützen (May 2), Bautzen (May 21), and Dresden (Aug. 24, 25, 27); but the invincible temper of the allies, who knew that he was playing his last card, made these victories almost fruitless. They were convinced that one grand defeat would neutralize all his triumphs. This was inflicted, after several minor defeats, at Leipzig—the great *Battle of Nations*, as it has been called (Oct. 16, 18, 19). The result justified their expectations—N. was hopelessly ruined! He commenced his retreat toward France, followed by the allies. When he recrossed the Rhine, he had only 70,000 or 80,000 men left out of his 350,000. All the French garrisons in the Prussian towns were compelled to surrender. N. appeared at Paris Nov. 9; and though great discontent prevailed in the country, and a spirit of opposition showed itself even in the legislative body, the senate decreed, at his bidding, another conscription of 300,000 men, with which N. began, 1814, Jan., to attempt to drive the allies out of France. His extraordinary skill and energy served only to mark his desperation. Mar. 30, the allied forces captured, after a severe engagement, the fortifications of Paris; next day, Emperor Alexander and the king of Prussia entered the city *amid the shouts of the populace;* Apr. 4 N. abdicated at Fontainebleau. He was allowed to retain the title Emperor, with the sovereignty of the island of Elba, and an income of 6,000,000 francs, to be paid by the French govt. A British ship conveyed him to Elba, where he arrived May 4.

After ten months, mostly spent in intrigues, N. made his escape from the island, landed near Frejus 1815, Mar. 1, and appealed again to France. The army went over to him in a body, and several of his marshals, but the majority remained faithful to Louis XVIII. Mar. 20 he reached Paris, reassumed the supreme power, promised a liberal constitution, and prepared once more to try the fortune of battle with the allies. At the head of 125,000 men, he marched (June 15) toward Charleroi, on the Flemish frontier, where the English and Prussian forces were assembling. The Duke of Wellington, who, the year before, had completed the deliverance of Spain, was appointed by the Congress of Vienna commander-in-chief of the armies of the Netherlands. The campaign lasted only a few days. June 16, N. defeated the Prussians under Marshal Blücher, at Ligny, which com-

pelled Wellington to fall back on Waterloo, where, on the 18th, was fought the most memorable and decisive battle of modern times. It resulted in the utter and irretrievable ruin of Napoleon. The despot, who knew what awaited him—for France had *not* recalled him from Elba; he came at the desire of a faction, whose interests were identical with his—returned to Paris. The house of representatives insisted that he should abdicate. He did so 1815, June 22, in favor of his son, Napoleon II.; they further demanded that he should leave the country for ever, and he retired to Rochefort, with the design of embarking for the United States. July 7, the allies again entered Paris, and refused to acknowlege the acts of the French provisional government. N., who saw that he could not escape either by sea or land, voluntarily surrendered (July 15) to Capt. Maitland of the *Bellerophon*, claiming the protection of British laws! It was, however, resolved by the British govt. to confine him for life on the islet of St. Helena, a lonely rock in the Southern Atlantic, 1,000 m. from the coast of Africa. He was conveyed thither by Admiral Cockburn, and landed at St. Helena, 1815, Oct. 16. The remainder of his life was politically insignificant. His chronic quarrels with his governor—or *jailer*, as the French prefer it—Sir Hudson Lowe; his conversations with friends and visitors about his past career; his deliberate attempts to falsify history in his writings, are familiar. After more than a year of illness he died of an ulcer in the stomach, and was buried with military honors. In 1840, his remains were removed to France, and deposited in the *Hôtel des Invalides*. N., in his earlier and later public life took the attitude of a friend and liberator of the common people. In his great middle career, he revealed himself as a despiser of common men and an oppressor of nations—a ruthless cynical believer in a government whose end was military glory, and whose basis was military force.

NAPO'LEON II.: son of Napoleon Bonaparte: see REICHSTADT, DUKE OF.

NAPO'LEON III., Emperor of the French: nephew of Napoleon Bonaparte: see LOUIS NAPOLEON.

NAPO'LEON, or in full, NAPOLEON JOSEPH CHARLES PAUL BONAPARTE, Prince: 1822, Sep. 9—1891, Mar. 17; b. Trieste; son of Jerome Bonaparte and nephew of Napoleon Bonaparte. When the insurrection broke out in the Romagna 1831, he was in Rome with his grandmother, Madame Letitia Bonaparte, but was forced to leave the city for Florence on account of his cousins (see LOUIS NAPOLEON) being implicated in the revolutionary disturbances. He was educated at a boarding-school in Geneva, and at the Milit. School of Ludwigsburg, in Würtemberg, completing his studies 1840, after which he travelled five years in Germany, England, and Spain. In 1845, he obtained permission to visit Paris under the name of Comte de Mont[illegible], but his relations with the

democratic party, and his advanced political opinions, rendered him suspected by the government, who ordered him to quit the country. He, however, again made his appearance on the eve of the revolution of 1848, Feb. After the fall of Louis-Philippe, he offered his services to the provisional govt., and was elected by the Corsicans a member of the constituent assembly, where he voted with the moderate republicans. He held for a short time, 1849, the office of minister-plenipotentiary at Madrid. After the *coup d'état*, he withdrew into private life; but on the restoration of the empire he reappeared to share in the honors that now fell thickly on his family. By a decree of the senate, 1853, Dec. 23, he was pronounced a French prince, with the right to a place in the senate and the council of state; at the same time, he received the insignia of the grand cross of the Legion of Honor, and—though he had not served—the rank of gen. of division. In the Crimean war, he commanded a division of infantry-reserves at the battles of Alma and Inkermann, but soon returned to France, on the plea of ill-health. N. was pres. of the imperial commission of the Paris Exhibition 1855. In 1858 he was appointed head of the ministry for Algiers and the colonies, but held the office for only a short time. During the same year he married Princess Clotilde, daughter of Victor Emmanuel, and in the Italian war of 1859, commanded the French army of reserve in s. Italy, but was not engaged in actual hostility. In 1861 he made a speech in the senate, reflecting on the Orleans family, for which he was challenged by the Duc d'Aumale. The challenge was *not* accepted, much to the disgust of the French army. N. was pres. of the French commission at the London Exhibition of 1862. In 1865 he resigned several public appointments, owing to a reprimand from the emperor about a speech. Afterward, however, he was intrusted with many delicate missions, and urged the emperor to a liberal policy. In 1876 he was returned to the French assembly for Corsica; but in the election of 1877 was rejected. The death of the Prince Imperial in Zululand 1879 gave N. and his sons a more prominent position in the Bonaparte family. The issuing by N. of a proclamation in the spring of 1883 led to violent excitement in France, prolonged discussions in the chamber, and a ministerial crisis; the prince was arrested, but soon set at liberty.

NAPOLEO'NA: see BELVISIA.

NARAKA, *nâr'a-ka:* the hell of the Hindus. Manu (q.v.) enumerates 21 hells or divisions of N., and gives a general description of the tortures which await the impious there. The Purân'as, however, are more systematic. The Vishn'u-Purân'a names 28 such hells. Thus, a man who bears false witness is condemned to the hell *Raurava* (i.e., Fearful); the murderer of a Brâhman, stealer of gold, or drinker of wine, goes to the hell *S'ûkara* (i.e., Swine), etc. Besides, we are told of 'hundreds and thousands of others.'

NARBONNE, *nâr-bŏn':* town in s. France, the dept. of Aude, 55 m. s.w. of Montpellier, on a branch (La Robine) of the Canal du Midi. It is the *Narbo Martius* of the Romans; but there is reason to believe that it was well known to the Greeks 500 years before the Christian era. It was colonized by the Romans B.C. 118, and probably got the designation Martius from Q. Marcius Rex, one of the consuls at the time. Situated only about 8 miles from the sea, on the direct road into Spain and into the basin of the Garonne, N. was in early times a place of great commercial prosperity. It was the second settlement of the Romans in South Gallia, and was considered by them an important acquisition, both for its strength and as the key to the road into Spain. Under Tiberius, it flourished greatly; the arts and sciences being cultivated with success, and its schools rivalling for a long time those of Rome. About A.D. 309, it became the capital of Gallia Narbonensis, and contained among other buildings a capitol, theatre, forum, aqueducts, triumphal arches, etc. It was taken 719 by the Saracens, who planted here a Moslem colony, and destroyed the churches. In 859 it fell to the arms of the Northmen. During the 11th and 12th c., it was a flourishing manufacturing city, but subsequently it fell into comparative decay, though still showing remains of its former splendor. A considerable number of architectural fragments—as capitals, marble slabs with inscriptions, friezes, etc.—have been found, and have been grouped into a collection of antiquities. The present very dirty town contains one imposing building, the Cathedral of St. Just, founded 1271, but still unfinished. The honey of N. is the best in France, both for color and flavor. There are some manufactures. Pop. about 29,000.

NARCEINE, n. *nâr'sĕ-ĭn*, or NARCEIA, n. *nâr-sē'yă* [L. *narcē;* Gr. *narkē*, torpor]: one of the vegeto-alkaline bases obtained from opium.

NARCIS'SUS: in ancient Greek fable, son of the river god Cephissus and of the nymph Liriope or Liriœssa of Thespiæ, in Bœotia. He was a youth of extraordinary beauty, of which he was excessively vain; and for this he was punished by Nemesis, by being made to fall in love with himself on seeing the reflection of his own face in a fountain. He died of this love-sickness; and on the place where he died, sprang up the flower which bears his name. The story of N. finely narrated by Ovid, is of comparatively late origin.

NARCISSUS, n. *nâr-sĭs′ŭs* [L. *narcissus;* Gr. *narkissos*, in *anc. myth.*, a beautiful youth, fabled to have been changed into the flower called by his name]: genus of plants of nat. order *Amaryllideæ*, having a perianth of six equal petal-like segments, and a bell-shaped corona of various magnitude. The species are natives of s. Europe, n. Africa, and temperate parts of Asia. Many are cultivated in gardens, for their beautiful and often fragrant flowers, which in general appear early in the season. Some are known by the names Daffodil (q.v.) and Jonquil (q.v.). The name N. is popularly restricted to those which have flat—not rush-like—leaves, and a short not bell-shaped corona. Of these, one of the best known is the Poet's N. (*N. poeticus*), with generally one-flowered scape, the flower white and fragrant, the corona with a deeply-colored border; others, with one or two flowers on the scape, are in common cultivation.—The Polyanthus Narcissus (*N. Tazetta*) has a number of flowers on the scape. It grows wild in stony places near the Mediterranean and eastward to China. Many varieties of it are in cultivation. It is grown not only in gardens and green-houses, but in water-glasses, like the hyacinth. It is very common in gardens in India, where it is highly esteemed as a flower. The narcissi in general are propagated either by seed, or by offset bulbs. They thrive best in a rich light soil.

Narcissus Poeticus.

NARCOSIS, n. *nâr-kō′sĭs* [Gr.—from *narkē*, numbness, torpor]: in *pathol.*, a state of benumbing stupor in which death may ultimately ensue from paralysis of the respiratory muscles; a typical instance is seen in the effects of opium.

NARCOTIC, a. *nâr-kŏt′ĭk*, or Narcot′ical, a. *-ĭ-kăl* [Gr. *narkōtikos*, having the power of benumbing—from *narkē*, torpor: It. *narcotico;* F. *narcotique*]: having the power of producing drowsiness, sleep, or stupor. Narcot′ic, n. a medicine which, in small doses, relieves pain and produces sleep. Narcot′ically, ad. *-lĭ*. Narcotine, n. *nâr′kō-tĭn*, see below. Narcotism, n. *nâr′kotĭzm*, effects of a narcotic; the condition of one affected by a narcotic.—*Narcotics* are remedies which, in moderate doses, lessen the action of the nervous system. Their full operation is sleep or coma, which, becoming profound and accompanied with paralysis, terminates in death. Opium is the type from which most descriptions of this

class of medicines have been drawn; but though most narcotics more or less resemble opium in their action, almost every one presents some peculiarity in the way in which it affects the system. These medicines are primarily stimulating, especially in small or moderate doses; but this stage of their action is comparatively short; and when the dose is large, the excitement is scarcely perceptible. Their power of inducing sleep has procured for them the names Hypnotics and Soporifics; while many of them are termed Anodynes, from their possessing the property of alleviating pain. Next to Opium, Henbane, Indian Hemp, and Aconite may be regarded as the most important narcotics.

Narcotics are administered usually with the view either of inducing sleep or of alleviating pain or spasm. As, however, their action is much modified by a variety of circumstances—such as age, idiosyncrasy, and prolonged use—they should be administered with extreme caution; and as a general rule, only under competent advice. The various quack medicines for children known as *Carminatives, Soothing Syrups*, etc., often contain some form of opium. When taken in excess narcotics are poisonous.

NAR'COTINE ($C_{22}H_{23}NO_7$): one of the organic bases or alkaloids occurring in opium, in which it usually exists in the proportion of 6 or 8 per cent. It may be prepared as follows: Opium is exhausted with dilute hydrochloric acid, and the alkaloidal bases that the extract contains are precipitated by the addition of caustic potash. The precipitated bases are then re-dissolved, and the solution is treated with oxalic acid to precipitate the papaverine that it contains, after which the filtered solution is treated with ammonia to throw down the narcotine. The precipitate so obtained is purified by re-crystallization from alcohol. Narcotine was the first alkaloid obtained from opium, of which it constitutes from 1 to 8 per cent. by weight. It is almost insoluble in cold water, moderately soluble in alcohol and in ether, and readily soluble in chloroform. It crystallizes in trimetric prisms, or in radiating needle-like forms, which melt at 349° F. Aqueous solutions of the alkaloid are neutral, and solutions in other menstrua are but feebly alkaline. Narcotine (unlike the other alkaloids that opium contains) appears to exist in opium in the free state, and not in the form of a salt. Narcotine possesses very slight alkaline properties; its salts do not readily crystallize, and are even more bitter than those of morphine, though the substance itself is almost tasteless. When first discovered (1803) it was supposed to be the stimulant principle of opium; but in reality it possesses very little activity. It has been prescribed in gradually increased doses up to a scruple, without the least injury. Its sulphate has been used in India as a substitute for quinine; and many cases of intermittent and remittent fevers have been treated by it with success.

NARD, n. *nârd* [L. *nardus;* Gr. *nardos*, nard: F. *nard*]. the shrub called the spikenard (q.v.), famed for its aromatic scent and medicinal qualities; an ointment prepared from the plant. NARDINE, a. *nâr'dĭn*, of or resembling nard. NARDOS'TACHYS: see SPIKENARD.

NARDO, *nâr'dō* (anc. *Neretum*): town of s. Italy, province of Lecce, 8 m. n.n.e. from Gallipoli. N. has manufactures of cotton goods and snuff, from cotton and tobacco grown in the neighborhood. The surrounding country abounds in olive plantations. Pop. about 8,500.

NARDOO, *nâr-dô'* (*Marsilea quadrifida*): plant of the acotyledonous nat. order *Marsileaceæ* (q.v.), the only plant of that order used in any way by man. It has but recently become known to botanists. It is found in Australia, where it affords important supplies of food to the natives of some regions, and has been of great use to some re-

Nardoo (*Marsilea quadrifida*).

cent exploring-parties. It grows in places occasionally covered with water; vegetating while moisture abounds, and then exhibiting abundance of green clover-like foliage, the leaves consisting of leaflets at the top of a stalk some inches in length. When the water dries up, the remains of the plants are often covered with dried mud. It is then that the spore-cases are gathered for food. They are oval, flattened, about an eighth of an inch in length, hard and horny, and requiring considerable force to pound them when dry, but becoming soft and mucilaginous when moistened. The spore-cases, pounded with their contents, are made into cakes like flour.

NARDUS, *nâr′dŭs:* genus of grasses, having a simple spike, spikelets all on one side, no glumes; each spikelet consisting of one floret, which has two paleæ,

Nardus Stricta.

the outer ending in a long point. *N. stricta*, growing in tufts in dry elevated situations, is often called MAT-GRASS: it is perennial, purplish, short, rigid, and worthless, as almost no animal but the goat will eat it.

NAREW, *nâ′rĕv:* river of w. Russia, affluent of the Bug, rising in the govt. of Grodno, and flowing w.s.w. to the main stream, which it joins at Sierock, after a course of 294 m. The waters of the N. are about as great in volume as those of the Bug. It is navigable to Tykoczin, 150 m. from its mouth.

NARGILE, usually NARGHILE, n. *nâr′gĭl-ā* [Pers.]: in *Turkey*, a smoking apparatus in which the smoke is passed through water, by means of a tube, in order to cool it.

NARIFORM, a. *năr′ĭ-fawrm* [L. *nāris*, a nostril; *forma*, shape]: nose-shaped.

NARO, *nâ′rō:* town of Sicily, province of Girgenti, 14 m. e. of the town of Girgenti. Its inhabitants trade in oil, wine, and sulphur. Numerous tombs, medals, and other antiquities have been found here. Pop. 10,253.

NARRAGANSETT BAY, *năr-a-găn′sĕt:* bay of the Atlantic Ocean penetrating the s.e. coast of R. I. about 28 m., varying in width from 2 to 12 m. It forms the e. boundary of Kent and Washington counties, is deep and sheltered, furnishing fine harbors, and is navigable for

large ships to the city of Providence, at its head. The upper portion is known as Providence Bay. There are several light-houses and various fortifications. The bay forms the outlet of the Pawtucket, Pawtuxet, Providence, and Taunton rivers, and contains several beautiful islands, of which the largest are Rhode Island (which gives name to the state), Providence, and Canonicut. There are fisheries of considerable value. The cities and towns along the coasts are noted for beauty of scenery and salubrity of climate.

NARRAGAN'SETT PIER: summer resort in South Kingston township, Washington co., R. I.; about 26 m. s. of Providence and 8 m. from Newport; on the Atlantic Ocean, only a short distance from the mouth of Narragansett Bay. The beach is very fine, and the varied attractions of the place have brought a multitude of visitors. There are a number of fine hotels and many elegant private residences. Communication with other places is furnished by a railroad and by various steamers. From Narragansett Heights, 400 ft. high, about three m. from the pier, an extended view is obtained.

NARRAGAN'SETTS: one of the Algonquin tribes of American Indians. This tribe occupied about the same territory as is now comprised in the state of Rhode Island, and from it Narragansett Bay was named. For a long period the N. were friendly to the colonists, and under the lead of their chief, Canonicus, aided the whites in their conflicts with the Pequots, and in various ways were of great assistance. They ceded a large tract of land to the whites 1644, but the following year engaged in hostilities, which were soon quelled. After the death of Canonicus, 1647, the tribe was less friendly, and 1675 cared for the women and children of the Pequots, while they made an attack on the town of Swanzey, Mass. Canonchet, chief of the N., soon afterward made a treaty with the whites, which he violated when King Philip returned from his murderous expedition in the Connecticut valley. To punish this treachery, the whites attacked the N. and destroyed their fort. Canonchet, with his warriors, then destroyed several villages, but was at length captured and shot. A concerted movement was then made upon the winter quarters of the N., in a swamp in the s. part of their territory, where the N. and their allies were gathered. About 500 wigwams were burned, and 1,000 Indians were slain. The N. were almost annihilated. The few who remained settled in what is now Charlestown, R. I., and gradually became civilized. They intermarried with the whites. In 1833 there were but 158 members of the tribe, and only seven of these were of pure blood. They gave up their native language, but it has been preserved in a grammar published by Roger Williams (London 1643), under the title *Key into the Language of America*. The N. long controlled a reservation of 3,000 acres of land. The tribal authority was maintained till 1880, when it was abolished by act of the state legislature.

NARRATE, v. *năr-rāt′* [L. *narrātus*, told, related—from *narrārĕ*, to relate: It. *narrare:* F. *narrer*]: to tell; to recite, as a story; to relate. NARRA′TING, imp. NARRATED, pp. NARRA′TION, n. *-rā′shŭn* [F.—L.]: an account; the telling or relating the particulars of an event; a story. NARRATIVE, a. *năr′rā-tĭv* [F. *narratif*]: giving an account of particulars: N. a continued account of the particulars, as an event; a story. NAR′RATIVELY, ad. *-lĭ.* NARRA′TOR, n. *-tĕr*, one who tells or relates, as the particulars of an occurrence.—SYN. of 'narration': tale; history; recital; relation; description; rehearsal; explanation; detail; narrative; record; memoir.

NARROW, a. *năr′rō* [AS. *nearwe*, narrow—from *neara*, nearer; *neah*, near, nigh: comp. Dut. *naauw;* O. Dut. *nauw*, narrow, close]: not broad or wide; having little distance from side to side; close; near; contracted; straitened; contracted in mind; bigoted; not liberal: V. to contract; to lessen the breadth of; to limit; to confine. NAR′ROWING, imp. NARROWED, pp. *năr′rōd.* NAR′ROWER, n. *-ĕr*, one who or that which narrows or contracts. NAR′ROWLY, ad. *-lĭ,* with little breadth or wideness; closely; within a little. NAR′ROWNESS, n. *-nĕs*, the condition or quality of being narrow; poverty; penuriousness; illiberality in views or sentiments. NARROW CLOTHS, in the *woolen trade*, those cloths under 52 inches wide. NARROW GAUGE, on a railway, width between the rails when less than 4 ft. 8½ in., which is the 'standard gauge;' but sometimes, though not with propriety, the 4 ft. 8½ in. (standard) is termed narrow guage in comparison with the 6 or 7 ft. guage. NARROW-MINDED, a. contracted in mind; illiberal. NARROW-MINDEDNESS, n. narrow views or sentiments; illiberality.—SYN. of 'narrow': circumscribed; limited; confined; contracted; small; niggardly; parsimonious; selfish; ungenerous; careful; exact.

NARSES, *nâr′sēz:* statesman and general, almost the last stay of the old Roman empire in Italy; born toward the last quarter of the 5th c., prob. abt. 478; d. prob. abt. 573. The place of his birth is uncertain. His parentage was obscure, and he was probably sold as a slave in childhood, having, according to the barbarous usage of the period, been previously emasculated. From some menial office in the imperial household at Constantinople, he rose by successive steps to the post of *cubicularius*, or private chamberlain of Emperor Justinian, and ultimately to that of keeper of the privy purse. In the difficult art of courtiership, N. long maintained a pre-eminence. More remarkable, however, was the distinction which this eunuch attained in military affairs. In 538 he was sent to Italy in command of a body of troops, professedly to act in concert with Belisarius (q.v.); but in reality, it is conjectured, with a secret commission to observe and control that general. After some successes, N., having disputed with Belisarius, assumed an independent authority; but his separate command was unfortunate, and he was recalled to Constantinople 539. After

some years, however, Belisarius was recalled, and N. was appointed to chief command in Italy. His conduct of that expedition extorted the admiration even of his enemies. Not having the command of a sufficient number of transports, he marched his army along the whole circuit of the shore of the Adriatic, and while the enemy with his fleet still held possession of the sea, was enabled to encounter them in the plain of Sentaglio, near Tagina, where, after a desperate engagement, the Goths were totally defeated, and their king, Totila, slain. N. took possession of Rome, and after a series of successes both in s. and n. Italy, completely extinguished the Gothic power in that peninsula. Justinian appointed N. prefect of Italy 553. He fixed his court at Ravenna, and continued, till the death of Justinian, to administer the affairs of Italy with great vigor and ability. The only blot on the character of his administrations is the avarice with which he is charged by his contemporaries. His exactions pressed heavily on the exhausted resources of the population; though their severity may be in some degree palliated by the splendor and utility of the public works on which he partly expended the public resources. On the death of Justinian, his ascendency came to an end. The Romans, on the accession of Justin, complained to him of the exactions of N., and that emperor deprived him, 565, of his office, a proceeding to which a special indignity was imparted by an insulting message from the empress, that it was time for him to 'leave arms to men, and to spin wool among the women of the palace.' To this bitter taunt (according to Paulus Diaconus, *De Gest. Long.* ii. 6), N. replied that he would 'spin for her a thread which she would find it hard to unravel;' and he is accused of secretly intriguing with Alboin, King of the Lombards, to incite a new invasion of Italy, at the same time submissively offering his services to the emperor for the purpose of repelling the invasion. This account, however, seems uncertain, perhaps improbable.

NARTHEX, *nâr'thĕks:* a part of the early Christian churches separate from the rest by a railing or screen, and to which the catechumens and penitents were admitted.

NARVA, *nâr'vâ:* Russian town in the govt. of St Petersburg, 95 m. w.s.w. of St. Petersburg; on the Narova, 10 m. from its mouth in the Gulf of Finland. It was founded 1233 by Waldemar II., King of Denmark, and came into the possession of Russia 1704. The navigation of the Narova is impeded by a waterfall near N., 14 ft. high, which is used as a source of power for driving saw-mills and other works. At N. is the largest cotton-mill in the world, employing 4,830 hands, and producing 610,000 pieces of cloth per annum: the moving force is supplied by water. Woolen and flax goods also are made here. Though belonging to the govt. of St. Petersburg, N. is ruled by the laws of the Baltic provinces. Here, 1700, Charles XII., with 8,000 men, defeated a Russian army of 60,000, under Peter the Great. Pop. (1878) 6,482. (1887) 3,600.

NARVAEZ, *nâr-vâ-ĕth′*, Don Ramon Maria, Duke of Valencia: Spanish general and statesman: 1800, Aug. 4—1868, Apr. 23; b. Loja in Andalusia. When very young he served in the war of Liberation against the French. He was an officer 1820, when constitutional govt. was re-established in Spain, and 1822, when a reactionary party of the royal guard took up arms to destroy the work of the revolution, N. ranged himself on the side of the liberals, and contributed by his courage to the repression of the mutiny. Shortly afterward under the command of Mina, he made the campaign of Cataluna against the guerrillas, who were assisted by the monks. The invasion of Spain by a French army 1823 forced him to retire from active life. He withdrew to Loja, and lived there in obscurity until the death of Ferdinand VII. 1832. In 1834, as captain of chasseurs, he maintained a hot struggle against the Carlists of the Basque provinces, and signalized himself in various engagements. In 1836 he commanded a division under the orders of Espartero, and in Nov. of that year, completely routed the Carlist leader, Gomez, near Areos. This was a decisive moment in his career: he became immensely popular, aspired to the highest offices of the state, and was regarded as the rival of Espartero. In 1838, by acts of terrible severity, he cleared the district of La Mancha of brigands, and was appointed 1840 capt.-gen. of Old Castile, and gen.-in-chief of the army of reserve. When Espartero gave Gen. Alaix a place in the ministry, N. resigned his command. He took part in the insurrection against Espartero that broke out at Seville 1840, but that having failed, he was compelled to flee to France, where he was soon joined by Queen Christina (see Maria Christina), and commenced those plots against the govt. of Espartero which effected its overthrow 1843. In 1844 he was appointed pres. of council, and created Duke of Valencia. His ministry was thoroughly reactionary. He recalled Maria Christina, and revised the liberal constitution of 1837. The progressista party was dissatisfied, and petty insurrections broke out, which the rigorous soldier-statesman repressed with an iron hand. But his dictatorial manners finally alienated even his personal friends, and his ministry was overthrown 1846, Feb. 10. After a brief exile as special ambassador at the French court, he returned to power 1847, but soon quarrelled with Queen Christina, and found it necessary again to retire from office 1851. In 1856, on the overthrow of O'Donnell's ministry, he again became pres. of council, and immediately began to strengthen the royal authority, and to restrict the liberty of the press. The intrigues of the court compelled his resignation 1857. He returned to power 1864, and (1865) was succeeded by O'Donnell, with whom he suppressed, 1866, a military revolt in Madrid. He replaced O'Donnell in the same year, and, despite the efforts of O'Donnell and Prim, retained power till his death 1868.

NARWHAL, n. *nâr'hwâl* [Dan. *narhvall;* Icel. *nahvalr;* F. *narval*, a narwhal—so called on account of the pallid color of the skin—from Icel. *nar*, a corpse, and *hvalr*, a whale. (Skeat says that Icel. *nar-* may stand for *nas-* a nose, the long horn projecting like a nose from the upper jaw)], (*Monodon* or *Narwhalus*): genus of *Cetacea*, of family *Delphinidæ*, resembling *Beluga* (q.v.) in form and in lack of a dorsal fin, but remarkably characterized by having no teeth at all, except two in the upper jaw, supposed to be canines, which sometimes remain quite rudimentary, even in the mature animal, as they are in the young, and are sometimes developed into great spirally twisted straight tusks, passing through the upper lip, and projecting like horns in front. Usually but one tusk, the left one, is developed, attaining a length of 6 ft. Only one species is ascertained, *M. monoceros* or *N. vulgaris;* other species being doubtful. It inhabits the Arctic seas, and is very rarely found so far s. as the Shetland Isles, though an accidental wanderer has reached the coast of England. Narwhals are often seen in great numbers among the ice-fields, and in the creeks and bays of the most northern coasts. They com-

Narwhal (*Monodon monoceros*).

monly associate in small herds. The tusks are much more frequently developed in the male than in the female, but in the female also according to some observers they sometimes attain large size. Rarely are both tusks largely developed, though they sometimes are so, and then diverge a little; generally one of them continues rudimentary, or attains a length of only a few inches, while the other becomes a great horn, projecting straight in front, from which the animal has received the name Sea Unicorn. A mature N. is generally about 15 or 16 ft. in length, without reckoning the tusk, 6 to 10 ft. long.

The body is less thick than that of the Beluga; the head is small, the forehead rises abruptly, the muzzle is very obtuse, the upper jaw projects a little; the first half of the body is nearly cylindrical, the remainder to the tail fin is conical. The tusk is hollow nearly to the point. Its use is rather conjectured than known. It is probably a weapon of defense, but Scoresby has suggested that it may be used also for breaking thin ice to obtain opportunity for respiration; and for killing fish, as he found remains of skates and other flat-fish in the stomach of a N., which it is not easy to imagine how a toothless animal, with rather small mouth and lips, could capture and swallow, unless the formidable tusk were first employed. Cephalopodous mollusks, however, are believed to constitute a principal part of the food of narwhals. The N. is a very active animal, swimming with great rapidity, lively, and playful. A group of narwhals playing together, projecting their great horns from the sea, and crossing them in their sport, is a very interesting sight. The N. is pursued by the Greenlanders and other inhabitants of the north, for its blubber, with which its whole body is invested to the thickness of about three inches, amounting to nearly half a ton in weight, and yielding a large proportion of excellent oil. The tusks also are valuable, being of an extremely compact white substance—denser, harder, and whiter than ivory—used as a substitute for ivory. The kings of Denmark have long possessed a magnificent throne of this material, preserved in the Castle of Rosenberg. The flesh of the N. is used by the Greenlanders as food. Great medicinal virtues were formerly ascribed to the tusks; but were merely imaginary.

NAS, *năs:* in *OE.*, contraction of *ne has*, for Eng. *has not.*

NASAL, a. *nā′zăl* [F. and Sp. *nasal;* It. *nasale*, nasal—from mid. L. *nasālis*, nasal—from L. *nāsus*, the nose]: pertaining to the nose; formed or affected by the nose, as a nasal pronunciation: N. a letter whose sound is affected by the nose, or is uttered through the nose; a medicine which operates through the nose. NASCAL, n. *năs′kăl*, a pessary made of wool or cotton to raise the nose when compressed.

NASALIS, *na-zā'lĭs*, or PROBOS'CIS MONKEY (*Nasalis larvatus*): monkey allied to the *Doucs* or *Semnopitheci*, but distinguished from all other monkeys by extreme elongation of nose, that organ being nearly four inches in length in the mature animal. In the young, the nose is comparatively undeveloped. The nostrils are quite at the extremity of the nose, and are separated merely by a thin cartilage. Of what use the magnitude of its

Proboscis Monkey (*Nasalis larvatus*).

nose is to the animal is unknown. The N. inhabits Borneo and neighboring islands, is gregarious, and is about three ft. in height, if placed erect, a position which it does not often assume. It can leap 15 ft. or more. Its fur is thick, not long, nor woolly; chestnut red, and in parts golden yellow.

NASCENT, a. *năs'ĕnt* [L. *nascens* or *nascen'tem*, being in its birth: It. *nascente*]: beginning to exist or grow; growing; increasing: in *chem.*, in the act or state of being produced or evolved. NASCENCY, n. *năs'ĕn-sĭ*, the beginning of production. NASCENT STATE, in *chem.*, state in which an element or compound is said to be at the moment when it is liberated from some chemical combination in which it had previously existed. The element or compound is *then* often capable of exerting far more powerful combining action with other bodies than it can exhibit when brought in contact with them *after* it has been liberated. Arsenic and hydrogen will not directly combine if brought into contact with one another under ordinary circumstances; but the application of Marsh's test (see ARSENIC) depends on the direct union of the nascent hydrogen (liberated by the decomposition of the water) with the arsenic, giving rise to arseniuretted hydrogen gas. Again, if hydrated protoxide of nickel (NiH_2O_2) be suspended in a solution

of caustic potash (KOH), it will undergo no change if a current of oxygen gas be passed through the solution; but if a current of chlorine be substituted for the oxygen, the whole of the metallic protoxide will be converted into the brown sesquioxide (Ni_2O_3), the resulting decomposition being shown in the equation:

Protoxide of Nickel.		Solution of Potash.		Sesqui-oxide of Nickel.		Chloride of Potassium.	
$2(NiH_2O_2)$	+	KOH + Cl	=	Ni_2O_3	+	KCl	+ H_2O

This change arises from the action of the chlorine on the potash, during which chloride of potassium (KCl) is formed, while the nascent oxygen which is liberated from the potash combines with the oxide of nickel. Again, cyanogen (CN) and chlorine do not enter directly into combination; but if cyanogen at the instant that it is liberated from one of its compounds (as, for example, cyanide of mercury) comes in contact with chlorine, the two combine; and many other examples of similar action might be adduced.

NASEBY, *nāz'bĭ:* parish and village of England, the county of Northampton, 12 m. n. of the town of Northampton; pop. 700; scene of the battle of N., between Charles I. and the parliamentary army under Fairfax and Cromwell, 1645, June 14. It resulted in the total defeat of the royalists, the king being compelled to flee, after losing his cannon and baggage, and nearly 5,000 of his army as prisoners.

NASH, *năsh*, Abner: 1716, Aug. 8—1786, Dec. 2; b. Prince Edward co., Va. He became a successful lawyer in New Berne, N. C.; was a member of the provincial congress 1774, and of the provincial council of the following year. He aided in framing the state constitution, was the first speaker of the house, and afterward speaker of the senate, and 1779–81 gov. of the state. In the latter year he declined to serve. He was member of the continental congress 1782–84, was re-elected 1785, and died in Philadelphia before his term of office expired.

NASH, Francis: 1720, May 10—1777, Oct. 7; b. Prince Edward co., Va.; brother of Abner N. He removed in early life to N. C.; became clerk of the Orange co. court; and 1771, in the conflict with the Regulators, was capt. of a company of royal troops. He joined the patriots at the opening of the revolution, was a member of the provincial congress 1775, by which body he was appointed lieut.col., in 1777 received a commission from the continental congress as brig.gen., joined Washington's army, and led a brigade in the battles of Brandywine and Germantown. In the latter battle he received a mortal wound. He died at Kulpsville, Penn. The order of congress that a monument be erected to his memory at govt. expense was disregarded, but private citizens have placed one over his grave.

NASH, JOHN: 1752–1835, May 13; b. London: architect. He underwent the usual training for his profession, but soon entered into some building speculations which enabled him to buy a small property in Caermarthen. Here in fresh speculations he lost much money; therefore, 1792, returned to London and architecture, in which he speedily rose to eminence. On the strength of having obtained a patent, 1797, for improvements in the construction of the arches and piers of bridges, he was in the habit of claiming a great part of the credit of introducing the use of cast-iron girders. A large part of his time was occupied in designing and constructing mansion-houses for the nobility and gentry in England and Ireland, but he is famous chiefly in connection with the great street improvements in London. From 1815, Feb., when he was appointed 'architect, valuer, and agent to the Board of Woods and Forests,' till near the end of his professional career, he was busily engaged in planning routes, grouping buildings, and fixing sites. Regent Street, Haymarket Theatre, Langham Place Church, and the terraces in Regent's Park, are specimens of his designs. The Pavilion at Brighton was another of his works. He retired from his profession 1834. N., notwithstanding his many defects, possessed great power of effective grouping, as is well shown in his works.

NASH, RICHARD, known as *Beau Nash:* man of fashion and society, who attained remarkable notoriety: 1674, Oct. 18—1761, Feb. 3; b. Swansea, in Glamorganshire; son of a Welsh gentleman. After studying at Oxford, he held a commission in the army, and subsequently took rooms in the Temple; but the dissipations of society had more attraction for him than the pursuits of law. He became a diner-out, a frequenter of good society, and contrived to support himself by gambling. But the grand turning-point in his fortunes was his visit, 1704, to Bath—then a favorite haunt of elegant invalids, and the scene of the gayest intrigues. N. undertook the management of the public balls, which he conducted with a splendor and decency never before witnessed. In this way he gained an imperial influence in the fashionable society of the place. It appears that he was distinguished also by a species of sentimental benevolence. He gambled hard and successfully; yet instances are related of his thrusting his own winnings into the hands of some one less fortunate, with theatrical generosity, and exclaiming: 'Go, and be happy.' His own equipage at this period of his career was sumptuous. He used, we are told, to travel to Tunbridge in a post-chariot and six grays, with outriders, footmen, French horns, and every other appendage of expensive parade. He is praised for the great care which he took of the morals of the young ladies who attended the Bath balls, always putting them on their guard against needy adventurers—like himself. In his old age, Beau N. sank into poverty, and often was in need of charity. He died at Bath.

NASHUA, *năsh'ū-a:* city, and one of the caps. of Hillsborough co., N. H.; on the w. bank of the Merrimac river, and at the mouth of the Nashua river; 35 m. s. of Concord, 14 m. n.w. of Lowell, 40 n.w. of Boston. Its s. boundary is formed by the state of Mass., to which state it was, for about 80 years after its charter was obtained, supposed to belong. It was long a portion of the town of Dunstable, suffered greatly in the Indian wars, and did not enter on its career of marked prosperity until about 150 years after its settlement. In 1822 a movement, in which Daniel Webster was prominent, was started for the establishment of manufactures on an extensive scale. Within four years large mills were erected, and the foundations of a thriving town were securely laid. N. has several railroads, and enormous water-power is supplied by a canal three m. in length and 60 ft. wide. The city was incorporated 1853, at which time it had pop. 8,942. The chief manufactures of Nashua are hardware and tools, iron and steel products, cotton goods, shoes, paper, engines, furniture, sash, doors and blinds, saddlery, caskets, etc. The city contains a U. S. fish hatchery, city and county buildings, several churches, banks, public and parish schools, two academies, library, etc. Under the charter of 1853 still in use, the government is vested in a mayor, who holds office two years, and a council. The school board is elected by the people. Pop. (1900) 23,898; (1910) 26,005.

NASHVILLE, *năsh'vĭl:* city, cap. of Davidson co. and of the state of Tenn.; on the Cumberland river, nearly 200 m. from its mouth; 206 m. s.w. of Lexington, 684 m. from Washington. It is an important railroad center, being on the lines of the Nashville, Chattanooga and St. Louis, the Louisville and Nashville, and the Tennessee Central railroads. It is built on a limestone foundation, from which it derives the name 'City of Rocks,' by which it is widely known. It is 460 ft. above sea-level, is surrounded by hills, and has a pleasant and healthful climate and many natural advantages. The city is lighted by gas and electricity, and has an elaborate system of water-works, supplying 10,000,000 gallons of pure water per day, an excellent sewerage system and has two valuable mineral springs, which attract many visitors. The street-railway lines have about 8.5 m. of track and the cars are run by electricity. The industries of N., capitalized at $13,173,000 and producing goods to the value of $18,470,000, include flour, grist-mill products, lumber and timber products, fertilizers, cotton goods, clothing, harness, saddlery, soap, stoves, ranges, hollow ware, coffins, shoes, candles, tobacco, wagons, carriages, and confectionery. There is a large export trade and extensive wholesale traffic in dry goods, boots and shoes, groceries and drugs. It is one of the principal cotton marts, and has an immense trade in tobacco and hard-wood lumber. Near by are almost inexhaustible fields of

coal of the highest grade. Among the prominent buildings are the State Capitol, costing $1,500,000; United States Government Building; Davidson County Court House; the City Hall; Tennessee School for the Blind; Tennessee Industrial School; the State Penitentiary; the Parthenon; City Hospital; Confederate Soldiers' Home; Vendome Theatre; the new Union Depot; and the various churches, banks, hotels, and educational institutions. The educational institutions, beside public and high schools, a state library of 40,000 vols., a Carnegie library and the library of the Tennessee Historical Society, include Vanderbilt University; the University of Nashville; Peabody School for Teachers; Medical and Dental Departments of the University of Tennessee, the rest of which is located at Knoxville; Ward Seminary; Belmont College; Boscobel College; Watkins Institute; St. Cecilia Academy; Fisk University; Roger Williams University; Walden University.

The parks and cemeteries include that surrounding the State Capitol building, in which is the tomb of James K. Polk; the national cemetery to the north, in which are buried 16,643 soldiers who fell in the civil war; Centennial Park, converted from the grounds of the exposition of 1897, the history building now being a museum and art gallery; Watkins Park to the west; Shelby Park to the east; Glendale Park to the south; Mount Olivet Cemetery; and the Cumberland Driving Park.

N. was settled 1780, and four years later was regularly laid out in lots, incorporated, and received its present name (having previously been known as The Bluff and Nashburg); and it obtained a city charter 1806. It was named in honor of Gov. Abner Nash of North Carolina, and during the early years of its existence was repeatedly attacked by the Cherokees and other Indian tribes. The legislature met here many times after 1812, but N. did not become the state capital till 1843. A new charter was secured in 1883 and revised in 1901, by which the control of city affairs is vested in a mayor elected every two years, and a municipal council, which approves the mayor's appointments of a board of education, board of health, park commissioners, and civil service commissioners. The board of public works, city judge, treasurer, comptroller, tax assessor, and city attorney, are elected by the people.

During the civil war, N. was one of the great military depots, was occupied 1862 by Union troops, and suffered severely from the evils inseparable from such a conflict. Since the return of peace it has been remarkably prosperous. In 1896, the state celebrated the centennial of Tennessee's admittance into the Union, and a great industrial exposition was held here the following year. Pop. (1870) 25,865; (1880) 43,350; (1886) 75,000, of which 18,000 were colored; (1890) 76,168; (1900) 80,865, of whom 30,044 were of negro descent and 3,037 of foreign birth; (1910) 110,364.

NASH'VILLE, Battle of: 1864, Dec. 15 and 16. After the battle of Franklin, 1864, Nov. 30, in which the Union troops under Gen. Schofield were repulsed by the Confederates under Gen. Hood, the former retired to the elevated grounds around the city of Nashville, and joined the force of Gen. Thomas, which held a strongly fortified position at that point. They were followed by Hood, who formed his lines s. of the city and threw up intrenchments. Meanwhile, Thomas had received reinforcements which, except in cavalry, which had been largely drawn upon to aid Sherman in his march to the sea, made his force nearly equal to that of Hood. Gen. Thomas was soon ready for operations, but severe weather, following a heavy storm of sleet Dec. 8, delayed an attack for several days. Dec. 14 a plan of attack was arranged for the next day. As soon as the fog lifted on the morning of the 15th, this plan was carried into effect. After brilliant fighting on the part of the Union troops, and desperate resistance by the Confederates, the latter were driven from their intrenchments. During the night, Hood took a position at the foot of Harpeth Hills, from which he was driven the following day. The retreating army was followed by the Union troops in full pursuit until Dec. 27, when Hood succeeded in escaping, with what remained of his utterly disorganized force, across the Tennessee river. From this point the main army of Thomas returned, but a Union cavalry force followed still further, and captured a large number of wagons and mules, and destroyed a great amount of property. Besides some 2,000 deserters, the Confederates lost over 13,000 prisoners, 72 guns, and a great quantity of small-arms and ammunition. The loss of the Union army during this campaign was about 10,000 men. The result of the battle was the practical destruction of Hood's army, and a serious blow to the Confederate cause. At his own request, Hood was relieved from command 1865, Jan. 23.

NASHVILLE, University of: in Nashville, Tenn., a coeducational institution founded in 1785 by the state of North Carolina as Davidson Academy. In 1806, after Tennessee had been founded, the name was changed to Cumberland College, and in 1826 to the University of Nashville. The school was closed during the civil war. The trustees of the university and of the Peabody Fund united in 1875 in establishing a normal school for the training of teachers. Montgomery Bell Academy and Winthrop model school constitute the preparatory department, and the other departments are collegiate and medical. The courses of study lead to the degrees of A.B., B.S., and B.L. In 1908, there were connected with the school 66 professors and instructors and about 1,500 students. The library contained over 20,000 volumes.

NASICORNOUS, a. *năz'ĭ-kŏr'nŭs* [L. *nāsus,* the nose; *cornu,* a horn]: having a horn on the nose.

NASIFORM, a. *năz'ĭ-fawrm* [L. *nāsus,* the nose; *forma,* shape]: having the shape of a nose.

NASMYTH, *nā'smĭth*, JAMES: engineer and inventor: 1808, Aug. 19—1890, May 7; b. Edinburgh; youngest of 11 children of Alexander N., landscape painter. He early showed strong taste for mechanical pursuits, and by intimacy with an ironfounder's son, and constant visiting of the works, gained a knowledge of model-making which enabled him, by the sale of models of steam-engines and various machines, to pay his fees at the science classes in the Univ. of Edinburgh—chemistry, nat. philosophy, and mathematics. He went to London 1829, and spent two years under the celebrated engineer, Henry Maudslay. Returning to Edinburgh, he constructed a set of engineering tools, with which, and a small capital, he began, 1834, at Manchester, the manufacture of mechanical tools, which rapidly developed into the great Bridgewater Foundry, a collection of workshops at Patricroft, near Manchester, covering 12 acres of ground. His remarkable inventions were made here, including the steam-hammer—a marvellous combination of might and delicacy—steam pile-driver, suction fan for ventilating mines, safety foundry-ladle, spherical-seated safety-valve, and reversing direct-acting rolling-mill. He retired to Penshurst 1857, and applied himself to astronomy, making his own telescopes, and publishing, jointly with Dr. James Carpenter, *The Moon, considered as a Planet, a World, and a Satellite.* He contributed *Remarks on Tools and Machinery* to Baker's *Elements of Mechanism*, 1858.

NASR-ED-DIN, *nâs'r-ed-dēn'*, Shah of Persia: born 1831, April 24; son of Muhammed Mirza, and fourth shah of the Kadjar family. He came to the throne 1848, Sep. 10; put down revolts of neighboring nomadic tribes; suppressed in their blood the religious outbreak of the Bâb and his followers; held himself neutral during the Crimean war, but at its close signed a treaty with Russia; and 1856 became involved in war with England, which was terminated, after repeated English victories, by the treaty of Paris, 1857, Mar. 4. In 1866 he permitted the construction of the Anglo-Indian telegraph across Persia. His dominions suffered from pestilence and famine 1860, and still more terribly 1873, when 2,000,000 are believed to have perished. In 1873 he made the tour of Europe, and published his diary of the journey. A concession made by him, at this time, for establishing railroads and canals, and working mines, was afterward annulled. Besides eight daughters, he has three sons, who are governors of provinces. The eldest, Muzaffer-ed-din, born 1853, Mar. 25, is the Valiahad or heir-apparent The revenues of Persia all go to the shah; and Shah N. is said to have laid by, mostly in precious stones, a fortune estimated at $35,000,000. He made a second visit to Europe, London and Paris especially, in the summer of 1889 He d. 1896, May 1.

NASSAU, *năs'aw*, Ger. *nâs'sow:* formerly till 1866 an independent duchy of Germany, now Wiesbaden (in large part), district of the Prussian province of Hesse-Nassau, 49° 50′—50° 50′ n. lat., and 7° 30′—8° 45′ e. long.; bounded w. and s. by the Main and the Rhine, the Prussian-Rhenish provinces, and the grand duchy of Hesse; e. by the Hesse and Frankfort territories; n. by Westphalia; 1,802 sq. m. Pop. (1890) 843,209. Wiesbaden possesses very great physical advantages. In its s. districts, nearly the whole area is occupied by the Taunus Mountains, whose highest point is the Great Feldberg, about 2,900 ft. This range includes within its boundaries the fertile valleys known as the Rheingau. The n. part of the dist. includes the barren highlands of the Westerwald, whose most considerable peak, the Salzburger Head, is nearly 2,000 ft. high. Besides the Rhine and the Main, the boundary-rivers, Wiesbaden is traversed from e. to w. by the Lahn, which becomes navigable at Weilburg, and is augmented by the confluence of numerous other streams, as the Weil, Ems, Aar, Dill, and Elbe. The productiveness of the soil is shown by the excellent quality of the numerous vegetable products, which include corn, hemp, flax, tobacco, vegetables, and fruits, including grapes, which yield some of the most highly esteemed Rhenish wines. The hills are well wooded and abound with game of various kinds, and the rivers yield abundance of fish and crustaceans. In the more mountainous districts, iron, lead, copper, and some silver are obtained, together with good building-stone, marble, and coal; the chief mineral wealth is, however, from the numerous springs, which, directly and indirectly, bring the govt. a clear annual gain of more than 100,000 gulden. The most noted of these springs, of which there are more than 100, are Wiesbaden, Weilbach, Langen-Schwalbach, Schlangenbad, Ems, Selters, and Geilnau, the majority of which were the property of the duke.

Wiesbaden, which is divided into 12 circles, has few towns of commercial importance, but many fashionable watering-places, annually crowded with visitors from every part of the world. Of these, the most considerable are Wiesbaden (q.v.) cap. of dist.—pop. (1900) 86,111—Schwalbach, Schlangenbad, Fachingen, Selters, and Geilnau. Höchst, an active little place on the Main, is the only manufacturing town of the duchy, but a brisk trade is carried on at many small ports on the Rhine, Main, and Lahn, whence the mineral waters, wines, and other natural products of the country are exported. The exports are wine—including some of the choicest kinds, as Hochheimer, Johannisberger, Rüdesheimer, Markobrunner, Asmannshäuser—mineral waters, corn, iron, manganese, cattle, etc.; while the imports embrace colonial products, manufactured goods, salt, jewellery, etc.

N. had a representative form of government, based on the constitution of 1814; and the duke, who was also a count-palatine of the Rhine, Count of Sayn, Königstein, Katzenellenbogen, and Dietz, etc., was assisted in the

government by a council of state, presided over by a prime-minister. More than one-third of the population belonged to the Rom. Cath. Chh., which was under the ecclesiastical jurisdiction of the bp. of Limburg; and excepting about 19,000 persons who belonged to the Jewish and other persuasions, the remainder of the people, including the then reigning house, professed the 'evangelical' form of German Protestantism, and were comprehended in one episcopal see under the bp. of Wiesbaden. Ample provisions were made in the dist. for popular education: there were more than 700 elementary schools, with about 1,000 teachers, 10 normal schools, a gymnasium, various training, theological, polytechnic, military, and other educational institutions. In accordance with a treaty with Hanover, Göttingen constitutes the university for arts for Wiesbaden, which has also a Rom. Cath. theol. faculty, in conjunction with Hesse-Cassel, at the University of Marburg. Wiesbaden, which is the principal seat for all national institutions of literature, science, and benevolence, has a good public library, containing 60,000 vols., a museum, etc.

N. occupied, in conjunction with Brunswick, the 13th place in the limited council of the diet, but it had two votes in the *plenum*, or full council. It furnished a contingent of 4,279, with a reserve of 1,883 men, to the army of the old confederation.

The receipts, according to the budget of 1866, were 4,461,410 florins derived from the crown domains and indirect taxes, and 317,935 florins from direct taxation, while the expenditure was estimated 5,804,975 florins. The national debt at the close of 1864 represented a capital of 6,038,300 florins. The duke, who was in possession of very extensive domains, ranked as one of the richest princes of Germany.

In tracing the history of N. to its earliest origin, we find that the districts now known by that name were occupied anciently by the Alemanni, and, on the subjugation of the latter people by the Franks, became incorporated first with the Frankish, next with the German empire. Among the various chiefs who raised themselves to independent power in this portion of the Frankish territories, one of the most prominent was Otto of Laurenburg, brother of King Conrad I., who became founder of two distinct lines of princes. The heads of these lines were Walram and Otto, sons of Count Henry I., who, 1255, divided the land between them. Walram II., the elder, was progenitor of the house of Laurenburg, which, toward the close of the 12th c., assumed its present name of N. from the name of its chief stronghold; while Otto, the younger, by his marriage with the heiress of Gelders, founded the line of Nassau-Gelders, whose last male representative died 1423, but which still survives through a female branch, in the family now occupying the throne of the Netherlands. This junior branch of the house of Nassau, by inheritance from a collateral representative, acquired possession, 1544, of the principality of Orange;

and since that period, the representatives of the Otto line have been known as princes of Orange (q.v.). The Walram line, which in 1292 gave an emperor to Germany, in the person of Adolf of N., was subdivided by the descendants of that prince into several branches, until, by the successive extinction of the other lines, the Nassau-Weilburg family, the latest reigning family in the duchy, was left, 1816, the sole heir and representative of the Walram dynasty in Germany. N. had been declared a duchy 1806, and 1817 the reigning Duke William granted a new constitution; but during the first sittings of the assembly dissensions arose between the ducal govt. and the representatives, the former having attempted to establish the proposition that the ducal domains were the unconditional property of the royal house, and that all the expenses of the state would consequently have to be met by taxation.

This proved a fruitful source of dissension between the duke and his people, and the opposition and discontent to which it gave rise were not finally allayed till 1834, when a more liberal ministry, under Count Walderdorff, succeeded the unpopular cabinet which had hitherto directed public affairs. Concessions were made by the ducal govt., which met the requirements of the chambers, and a satisfactory compromise was effected in regard to the crown revenues. In 1836 N. joined the German *Zoll-Verein*, and it has since continued to advance in material prosperity. The reigning Duke Adolphus William, who succeeded his father, Duke William, 1839, showed the same conservative tendencies as his predecessor. The revolutionary crisis of 1848 found the people, who had been harassed by over-government and by a jealous dread of liberal sentiments, ripe for insurrection. The peasantry rose *en masse* in the rural districts, and revenged themselves for the severity of the game-laws, and other obnoxious restrictions, by wanton destruction of game and wood in the forests belonging to the crown and nobility. These disorders were speedily put down by the aid of federal troops; but notwithstanding the concessions made by the govt., the relations between the people and their ruler continued for many years unsatisfactory. For the events which led to the incorporation of Nassau with Prussia, see GERMANY.

NASSAU, *năs'aw:* town, cap. of New Providence, centre of the trade of the Bahamas (q.v.), pleasantly situated on the face of a hill, lat. 25° 5′ n., long. 71° 21′ w. The town is well laid out; has several handsome public buildings, and an excellent and well-sheltered harbor. The climate is very salubrious, and N. is a great resort of invalids from the north. It has extensive hotel accommodation, a lunatic asylum, and a leper-house, and is defended by two forts. N. exports cotton, pimento, and salt. During the civil war in the United States, it became notorious in connection with the blockade-runners. Pop. 9,000.

NAS'SAU HALL. See PRINCETON UNIVERSITY.

NASSICK, *nâs'ĭk*, or NASHIK: town of British India, in the dist. of N., presidency of Bombay, 95 m. n.e. of Bombay, on the river Godavery, not far from its source. It is a town of great sacredness in the estimation of the Hindus—more revered than even Benares; is a great place of pilgrimage, chief seat of Brahmanism in the Deccan, and residence of many families of Brahmans, some of them living in great affluence. It contains many temples, built along both banks of the Godavery and on rocks in the river. They all are of black basalt, and dedicated to Siva. Of far greater interest, however, are the Buddhist caves, about 5 m. from the town, in a conical hill, at a height of about 100 yards from its base. They are rudely executed. The figures which they contain are in good preservation, and the leading figures are those of Buddha; but the whole character of the remains is thought to indicate Buddhism in a state of transition or compromise with Brahmanism. One cave is 45 ft. square, and its flat roof is wholly unsupported. Notwithstanding the Buddhist origin and character of these caves, the Brahmans of N., for the sake of gain, encourage the popular reverence for them. Pop. (resident) of N. (1891) 24,400.

NASSOLOGY, n. *năs-sŏl'ŏ-jĭ* [Gr. *nassō*, I stuff; *logos*, discourse]: the art of preparing specimens of animal bodies, or the art of stuffing them.

NAST, *năst*, THOMAS: caricaturist: born 1840, Sep. 27, Landau, Bavaria. He came with his father to America 1846; had instruction in drawing about six months, under Theodore Kaufmann, and at once began work on *Frank Leslie's Illustrated Newspaper;* went to England 1860, to make sketches of the Heenan-Sayres prize-fight for the *N. Y. Illustrated News;* and thence to Italy, to follow Garibaldi and make war-sketches for the *N. Y. Illustrated News*, the *Illustrated London News*, and *Le Monde Illustré* of Paris. Returning to America 1861, he made a permanent connection with *Harper's Weekly;* began 1862, July, drawing war-sketches of the contest between north and south; was most successful with his earliest political caricature, aimed at the peace party; and from that time became by his cartoons a notable figure in American journalism. In 1873, again 1885 and 87, he appeared on the lecture platform, with caricature illustrations, or oil landscapes and other sketches, executed before his audiences. Besides this work with the pencil in periodicals and books he displayed marked ability as a painter in oil and watercolor. In 1902 he was appointed consul-gen. at Guyaquil, Ecu., where he died 1902, Dec. 7.

NASTILY, NASTINESS: see NASTY.

NASTURTIUM, n. *năs-tėr'shŭm*, or NASTUR'TION, n. *-shŏn* [L. *nāsus*, the nose; *tortus*, twisted—*lit.*, nose-wring, as if their qualities when tested would cause the nose to twist]: the water-cress, the Indian cress, etc.; *Tropæŏlum majus*, ord. *Tropæōlācĕæ:* see CRESS: TROPÆOLUM.

NASTY, a. *nâs′tĭ* [formerly written *nasky:* Low Ger. *nask*, dirty, piggish: Lap. *naske*, unclean, dirty: Fin. *naski*, a pig: prov. Sw. *snaskig*, nasty; *snaska*, to eat like a pig]: very dirty; filthy; obscene; nauseous. NAS′TILY, ad. *-tĭ-lĭ.* NAS′TINESS, n. *-nĕs*, filthiness; dirt.—SYN. of 'nasty': dirty; foul; sordid; disagreeable; defiled; disgusting; indelicate; indecent; gross; lewd.

NATAL, a. *nā′tăl* [F. *natal*—from L. *natālĭs*, of or belonging to birth—from *nātus*, born: It. *natale*]: of or relating to birth; native.

NATAL, *nâ-tâl′:* British colony on the s.e. coast of Africa, about 800 m. e.n.e. of the Cape of Good Hope, between 29° and 31° s. lat., and 29° and 32° e. long. Its n.e. boundary is the Tugela or Buffalo river, which divides it from Zululand, and its s.w. boundary are the Umzimculu and Umtamouna rivers, separating it from Kaffraria proper. It is abt. 270 m. long from n. to s., and 170 m. broad from e. to w.; 18,750 sq. m. The region now forming the colony of Natal derives its name from its being discovered by the Portuguese on Christmas day 1497. It was visited about 1822 by several white traders from the Cape, who found the country in possession of the Zulu chief Chaka, who ruled in a most sanguinary manner over all the tribes, from the Umzimculu to the St. Lucia river. He was killed and succeeded by his brother Dingaan 1838; but the latter having treacherously murdered a party of emigrant Dutch Boers, who had paid him a friendly visit by invitation to buy land, he was attacked and finally destroyed by the Boers, who at that time had emigrated from the Cape Colony in large numbers, and who made his brother Panda paramount chief in his stead, and then settled themselves down in the country as his lords and masters. The Brit. govt., however, interfered, and, after a severe struggle on the part of the Boers, the country was formally proclaimed a British colony 1843, May 12, since which time it has made satisfactory progress. In 1856, it was erected into a distinct and separate colony, free from the control of the govt. of the Cape. In 1873, Langalibalele, a chieftain of Zulus within the N. frontier, was on suspicion treated very summarily by the colonial govt., and banished. The English govt. decided that the proceedings were illegal, and Sir Garnet Wolseley was sent as temporary governor. It was mainly because the security of N. was menaced by the warlike forces and equipments of Ketchwayo, nephew of Dingaan, king of the free Zulus, that the Zulu war of 1879 broke out and Zululand was invaded by the British. Most of the fighting during the rising of the Transvaal Boers in 1881 was done in N. On 1897, Dec. 30, the province of Zululand was annexed to N., and in 1903, Jan., the transvaal districts of Vryheid, Utrecht, and part of Wakkerstroom.

A lofty and rugged range of mountains divides N. from the Free State and Basutoland, and present both the flat-top and serrated summits of

the chain, of which they are a continuation, so well known in the Cape Colony as the Sneeuwberg and Stormbergen. About lat. 28° 30′, these mountains seem to reach their culminating-point, and probably attain a height of 10,000 ft., forming a summit-line of watershed, from which flow to all points of the compass the waters of the Orange, Umzimvoobo, Vaal, Tugela, and other large s. African streams. Toward the coast, these mountains present a scarped and almost inaccessible face; toward the interior they gradually die away into the immense rolling plains of the Free State. Many offshoots from these mountains traverse the colony, dividing it into a series of steps or plateaux, gradually rising from the coast region to the foot of the mountains, and forming so many zones of natural productions. The coast region, extending about 25 m. inland, is highly fertile, and has a climate almost tropical, though perfectly healthful. Sugar, coffee, indigo, arrow-root, ginger, tobacco, and cotton thrive amazingly, and the pine-apple ripens in the open air with very little cultivation. The midland terrace is more fit for the cereals and usual European crops; while on the higher plateau, along the foot of the mountains, are immense tracts of the finest pasturage for cattle and sheep.

The climate is very salubrious; the thermometer ranges between 90° and 38°, but the heat, even in summer, is seldom oppressive. The mean annual temperature at Pietermaritzburg, the capital, is 64° 71′. The winter begins in Apr. and ends in Sep.; average number of rainy days 13. In summer, thunder-storms are very frequent and severe. The annual rainfall on the coast is about 35 inches. Inland, it varies much in different districts, and is greatest in summer. The s.e. is the prevailing wind here in summer as in the Cape Colony. Occasionally the sirocco or hot wind from the n.w. is felt, terminating usually in a thunder-storm.

N. has but one natural harbor on its coast, and that is D'Urban, or Port Natal, lat. 29° 53′. It is completely landlocked, but a bar prevents vessels above a certain tonnage from entering; generally on it the depth of water varies from 9 to 18 ft. There is secure holding-ground in the outer anchorage. The harbor of D'Urban is of such importance to N., that many extensive engineering operations have been carried on for improving it and increasing the depth at the entrance. The principal rivers are the Tugela or Buffalo, the Umcomanzi, Umgani, and Umzimculu; like the majority of s. African rivers, they are useless for inland navigation; but their streams are permanent, and often available for irrigating purposes, thus giving N. in one essential point a decided superiority over the Cape Colony. Efforts are being made to improve the mouths of two of the rivers for harbors.

Coal, copper-ore, iron, and other minerals are found in several places, and doubtless, when the great mountain-range is properly explored, it will be found very rich in mineral wealth. Large forests of valuable tim-

ber abound in the kloofs of all the mountain ranges, and many tracts along the coast also are well wooded. Natal is divided into the following counties: D'Urban, Victoria, Alexandra, and Alfred on the coast region; Pietermaritzburg, Umcomanzi, and Umroti, central; and Klip River and Weenen at foot of the mountains. The cap. is Pietermaritzburg, pop. 17,500, on a tributary of the Umgani river, about 50 m. inland. It possesses a large military establishment. Its name is a compound of the Christian name of Pieter Rietief, and the surname of Gert Maritz, two leaders of the immigrant Boers. D'Urban or Port Natal, a flourishing town, has railway communication with Pietermaritzburg and Ladysmith, with its landing-place, and with several points on the coast. Pop. of town and suburbs 25,512, of which half are Europeans. It has two newspapers, and several banks and other public institutions. Verulam, Weenen, Richmond, Newcastle, Pinetown, Colenso, Greytown, and Ladysmith are thriving towns.

Natal is governed by a governor (lieutenant governor till 1880), aided by an executive council of not more than six members; by a legislative council of 12 members appointed by government, and by a legislative assembly of 39 members elected for four years. The governor represents the king, and is appointed by the home government. He appoints the executive council, and with their advice nominates the members of the legislative council. The Wesleyan Church (English) is strong in the colony; and the Congl. churches and the Rom. Cath. Church, with the Anglican, Scottish, Dutch, and other churches, are well represented; also there are many successful stations of the American, Norwegian, and Berlin missions. Education is now receiving much attention, and schools are multiplying.

The De Beers and Bezuidenhout passes are the only practicable roads across the mountains, and lead by very circuitous routes across the Free State into Cape Colony; and the numerous mountain streams lacking bridges render internal communication very difficult. The railways, which belong to the government, have a length of over 600 miles, and extend into the Orange River Colony and Transvaal.

The principal articles of export from Natal are wool, sugar, ivory, and hides. The exports comprise wool, gold, sugar, coal, hides, Angora hair, bark, and spirits. The total annual value of the exports is about $25,000,000 and of imports $50,000,000. The pop. consists of Dutch Boers; of English and German settlers; and the remains of the Zulu tribes, who originally possessed the country. It numbered (1901) 925,118, of whom 46,788 were whites. The returns as to the native population are only approximate, and calculated on the 'hut tax.' The natives, the most industrious of the Kafir races, possess horses, cattle, sheep, etc., and properly managed, make excellent servants. The growth of sugar culture

has led to the introduction of coolies from India. The total tonnage of the vessels that entered and cleared the port of D'Urban (1894) was 1,386,159 tons. The discovery and development of the diamond-fields on the Vaal river have promoted the prosperity of N.

The large animals are gradually disappearing, though elephants are still occasionally seen in the dense bush of the coast region. Lions, leopards, wolves, and hyenas still hang on the outskirts of civilization. The smaller antelopes are plentiful, and alligators are found in nearly all the rivers n.e. of the Umzimculu. N., besides several poisonous snakes, produces a small species of boa, which sometimes attains a length of 16 ft. The hippopotamus is still found near the mouths of the rivers on the e. frontier.

The botany of this region resembles that of Kaffraria proper, though generally more tropical. All the timber-trees of the Cape Colony are found here, besides many others. The climate of the coast region, however, is too warm for the grape, at least for the purpose of wine-making.

Brook's *Natal*, by Mann (1869); *The Cape and South Africa*, by Noble (1878); Silver's Handbook to *South Africa* (1881); Kermode's *Natal* (1882).

NATAL', John William Colenso, Bishop of: Anglican divine: 1814, Jan. 24—1883, June 20; b. St. Austell, Cornwall. He was educated at St. John's College, Cambridge; graduated 1836; became one of the the masters of Harrow School, and, 1842, tutor of St. John's College.

In 1846 he was appointed rector of a parish in Norfolk, nd in 1854 first Bishop of N., s. Africa. His two treatises on Algebra (1849) and Arithmetic (1853) had great popularity, and were adopted as text-books in many schools and colleges. He publicly manifested his respect and affection for the Rev. Frederick D. Maurice (q.v.), at the moment when that gentleman was in disgrace with the 'orthodox' section of the religious world, by dedicating to him a vol. of sermons, and by his edition of the *Communion Service, with Selections from Writings of the Rev. F. D. Maurice* (1855). In the same year appeared his *Ten Weeks in Natal;* 1861, his *Translation of the Epistle to the Romans, commented on from a Missionary Point of View;* and *A Letter to his Grace the Archbishop of Canterbury, upon the Question of the Proper Treatment of Cases of Polygamy, as found already existing in Converts from Heathenism*, in which he recommends, on grounds both of reason and Scripture, that converts to Christianity, already possessing several wives, should *not* be forced to put them all away, except one. The *Letter* brought on him severe criticism, but a tempest of disapprobation burst forth in the following year (1862) when he published *The Pentateuch and Book of Joshua Critically Examined*, in which he endeavored to prove that, as they stand, these books are not the products either of the age to which they are usually assigned, or of the authors whose names they bear; and that they

are not entirely historical, but in many passages are overlaid with legendary, mythical, and symbolical incidents. The last part of this work was published 1879. The bp. of Cape Towu, the metropolitan bishop, declared Colenso deposed from his see; but on appeal to the privy council 1865, the deposition was pronounced null and void. He earnestly defended the African against the injustice of the white man; he visited England to plead the cause of Langalibalele 1874. He edited *Cetshwayo's Dutchman*, 1879. Other works by the bishop are *Natal Sermons* (1866); and *Lectures on the Pentateuch and the Moabite Stone* (2d ed. 1873).

NATAL′, or Rio Grande do Norte, *rē′ō grân′dā dō nor′tā:* city, fortified seaport of Brazil, cap. of the province of Rio Grande do Norte; on low lands about three m. from the mouth of the river of that name, 100 m. n. of Parahiba. Pop. 10,000.

NATANT, a. *nā′tănt* [L. *natans* or *natan′tem*, swimming]: swimming; floating on the surface. In *her.*, see Naiant. Na′tantly, ad. *-lĭ.* Natation, n. *nă-tā′shŭn*, the act or practice of swimming. Natatores, n. plu. *nā′tă-tō′rēz* [L. *natātor*, a swimmer]: the swimming order of birds, distinguished by their webbed or partially webbed feet; called by Cuvier *Palmipedes* (q.v.). Na′tato′rial, a. *-rĭ-ăl*, swimming; formed for swimming. Na′tatory, a. *-tėr-ĭ*, adapted for swimming.

NATCHEZ, *năch′ĭz:* city, cap. of Adams co., in s.w. Mississippi, second city in size in the state; a port of entry 280 m. above New Orleans. It is finely situated on the e. bank of the Mississippi river, with a lower business section on a narrow strip of the river bank, called 'N. landing' or 'N. under the hill'; and a more extensive part, largely occupied with residences and public buildings, on the summit of a bluff 150 ft. above the river, known as 'N. on the hill.' The communications between the two parts are by broad and well graded roads; the brow of the bluff along the whole front of the city is a park; the streets are well made gravelled roads, with beautiful shade trees, many handsome residences with fine grounds and gardens; and with such public buildings as the court-house, the city hall, market house, masonic temple, Rom. Cath. cathedral, Presb. church, and Episc. church. There were many beautiful residences of wealthy planters in the suburbs of N. before the civil war, few of which remain as formerly. A tornado laid in ruins a large part of the city 1840; and 1862, May 12, a part of Farragut's fleet captured it. It is the cotton shipping port for a large and rich district, and has good steamboat connections with the whole Mississippi valley. The earlist settlement by the French, was planned 1700, but not made until 1716, when Bienville built Fort Rosalie on the bluff. The Natchez (q.v.) Indians wrought destruction and massacre 1729, Nov. 1, but were shortly afterward exterminated or driven away. English occupation began 1763; and Spanish 1779, con

tinuing to 1798, March. The terr. of Miss. was created 1798, April, and N. made the capital. It became a city 1803. In 1820 Jackson was made the cap. of the state. Pop. of N. (1850) 4,434: (1860) 6,612; (1870) 9,057, of whom 5,239 colored; (1900) 12,210; (1910) 11,791.

NATCH'EZ: tribe of American Indians, of the Huaxteco-Maya family traditionally, who were found by Spanish explorers 1560, and by La Salle 1683, on the land e. of the Mississippi, which was first settled by Iberville, and where the city of Natchez now stands. Their civilization was very much beyond that of tribes about them, and in customs, language, and religion by sun-worship and the keeping of a sacred fire, they showed Aztec relations. Their principal chief was called 'the great sun,' they constructed mounds, and had a large temple for the perpetual sacred fire. Noted for licentious customs, they were yet brave and friendly to the French, until their collisions with Bienville 1716 and 22, and the outbreak against Chopart's rule, and the massacre, 1729, Nov. 28, of nearly all the French. This event led to French and Choctaw joint war for two years on the N., killing a large part of the warriors, selling 400 prisoners, including the chief and his family, into slavery in St. Domingo, and driving the remnant into Texas, where about 300 have since lived with the Chickasaws and Muskogees, keeping up the old ways of the tribe. The Natchitoches, whom the fugitive Natchez dislodged 1731 from their fortified town on an island in Red river, La., were kindred to the Natchez. They united with the Caddoes, another kindred tribe.

NATHLESS, ad. *năth'lĕs*, and NATHELESS, ad. *năth'-lĕs:* an old spelling of NEVERTHELESS.

NATHMORE, ad. *năth'mōr*, or *nāth'mōr*, or NATHEMORE: in *OE.*, for NONE THE MORE.

NATICIDÆ, *nā-tĭs'ĭ-dē:* extensive family of gasteropod mollusks, of the section *Branchifera*, order *Prosobranchiata*, sub-section *Holostomata*. In the same sub-section are the periwinkles, river-snails, top-shells, ear-shells, tooth-shells, and limpets. In N. the shell is globular, foot very large, mantle lobes hiding more or less of the shell. The family embraces many species diffused throughout all seas, representatives of most of them found on the American coasts. They are carnivorous, feeding voraciously on other mollusks and on dead fish. The radula or lingual ribbon has teeth in seven rows which enable them to perforate shells. The fossil genus *Natica* is found in Upper Silurian, Devonian, Carboniferous, and Permian formations, and is abundant in the triassic, jurassic, cretaceous, and tertiary.

NATICK, *nā'tĭk:* town of Middlesex co., Mass., on the Boston and Albany railroad, 17 m. from Boston, 4 from Framingham, with a branch road n.w. to Saxonville. The Charles river crosses the s.e. part, and Cochituate Lake, a principal source of the water supply of Boston, lies partly within the town on the n. The outlying parts are occupied by small farms, market gardens, and country residences, and in the business centre are numerous extensive manufactories of boots and shoes: also hats and base-balls are made, and there is the usual trade of a centre of industry. There are water and gas works, a national bank, savings bank, fine public library and library building, eight churches, a high school, and a weekly newspaper. The town was incorporated 1781. Its history dates from John Eliot's coming 1651 with a band of 'praying Indians' from Nonantum, and his establishment of a church 1660, now represented by the Unitarian Church. A monument to the memory of Eliot stands in the cemetery. Felchville and South N., villages and business centres, are within the town limits. A representative of the shoe trade in N. was Henry Wilson, who rose to the U. S. senate and was vice-pres. 1873. —Pop. (1880) 8,479; (1900) 9,488; (1910) 9,866.

NATION, n. *nā'shŭn* [F. *nation*—from L. *natĭōnem*, a race, a tribe—from *natus*, born]: the inhabitants of one country united under the same government; a state or independent soc. united by common political institutions: also in a different application, an aggregate mass of persons connected by ties of blood and lineage, and sometimes of language—a race. The modern dogma of nationalism, as maintained by a class of theoretic politicians (and which might more properly be called *racialism*—leaving nationalism to denote the recent modified application of socialism in pol. econ.), starts from an assumption that a nation in the latter or race sense ought necessarily to be also a nation in the former or political sense, and endeavors to assign limits to the several races of Europe, with the view of erecting each into a distinct state, separated from other states or nationalities. The extreme politicians of this national school seems to consider the supposed rights of nationalities as paramount even to the obligations of treaties, and the political conjunction of one nationality with another is looked on by them as an adequate ground for a revolt or separation, apart altogether from the question whether the nationality is well or ill governed. In fact, the different races in Europe are so commingled, that any reconstruction of the political map of Europe, on ethnological principles, would be impossible, even if desirable. The blood of nine-tenths of Europe has been mixed within the historical period. The test of language, on which nationality has sometimes been based, is a deceptive one, so far as it is indefinite and perpetually fluctuating. The people on the frontier between two races, as in the South Tyrol, generally speak two languages. Moreover there are dialects, like the Walloon, the Grödi-

nerisch of the Tyrol, and the Romansch of the Grisons —as also the Breton, Welsh, Gaelic, and Irish languages, which could hardly be made the basis of independent communities. The well-being of the people governed is properly the end of all government, and it has practically not been always found that a state is better governed when it consists of one race only, than when it includes an aggregate of races. Highly diversified nationalities may be united in one political system, provided only that the government respects and consults the peculiarities of the several races, and does not attempt to force the usages, habits, or language of one on the rest. See ETHNOLOGY. NATIONAL, a. *năsh'ŭn-ăl*, pertaining to a nation; public; general. NA'TIONALLY, ad. *-lĭ*. NA'TIONAL'ITY, n. *-ăl'ĭ-tĭ*, the quality of being strongly attached to one's own country; national character; any body of a population differing in race, language, and national feeling from the governing race of the state to which they belong. NA'TIONALIZE, v. *-ăl-īz*, to make national. NA'TIONALIZING, imp. NA'TIONALIZED, pp. *-īzd*. NA'TIONALISM, n. *-ăl-ĭzm*, nationality: in pol. economy, in two different applications—(1) Racial Nationalism (see above); (2) Industrial Nationalism, a kind of state socialism (see NATIONALISM, INDUSTRIAL). NATIONAL DEBT, the money owing by a nation or state (see DEBT, NATIONAL). LAW OF NATIONS, that law which natural reason appoints for all mankind; international law: see LAW: INTERNATIONAL LAW.

NATIONAL CONVENTION: assembly of deputies of the people, which assumed the whole government of France on the overthrow of the throne 1792. When the National Assembly (see ASSEMBLY, NATIONAL) had decreed the suspension of the king, 1792, Aug. 10, it appointed the election of the N. C., which commenced its sittings Sep. 21. Its first act was to declare France a republic, Sep. 25. Upon this followed the trial and condemnation of the king. Through the support of excited mobs, the extreme Jacobin party became predominant in the convention; where, from the elevated seats on which its members sat, it received the name of the *Mountain* party. The *Revolutionary Tribunal* was established; the chief administration of affairs was intrusted to the *Committee of Public Safety*, which exercised the most despotic powers. The Girondists (q.v.), at first a powerful party in the convention, were destroyed, many of them perishing by the guillotine; and a new constitution, thoroughly democratic, was adopted, 1793, Aug. 10; but its operation was suspended until peace should be restored. Meanwhile, the actual rulers of the country displayed marvelous energy; almost a million of citizens being placed under arms, and immense provision of all warlike stores made by means of requisitions. They also proceeded with merciless severity against their political opponents, dealing with them as traitors; hundreds of thousands were thrown into prison, and the number who died by the guillotine increased daily both in Paris

and throughout France. The national convention itself latterly became subject to the dictatorial power of Robespierre; many of its members were guillotined within a few weeks; and independent opinion was no longer expressed. The overthrow of Robespierre was followed by a great reaction; the Jacobins were suppressed; and, finally, the national convention, after concluding peace with Prussia and Spain, dissolved itself 1795, Oct. 26 (4th Brumaire of the year IV.), leaving to the nation a new constitution, which placed the government in the hands of a Directory (q.v.).

NATIONAL COVENANT. See COVENANTS, THE.

NATIONAL DEBT. See DEBT, NATIONAL.

NATIONAL (or STATE) EDUCATION. See EDUCATION, NATIONAL; EDUCATION IN THE UNITED STATES.

NATIONAL EDUCATIONAL ASSOCIATION, THE: an organization composed of teachers and other persons interested in education. Its purpose is the discussion of topics relating to the education of the whole people, to the end that the profession of teaching may be elevated in its character, that its interests may be advanced, and that the cause that it represents may be promoted in the United States.

The association exists as a body corporate of the District of Columbia, under the name of The National Educational Association of the United States, by virtue of an act of incorporation passed by congress and approved by the president 1906, June 30.

Section 2 of the act provides that 'This corporation shall include the National Council of Education and the following departments, and such others as shall be created by organization or consolidation, to wit: the departments (1) of superintendence; (2) of normal schools; (3) of elementary education; (4) of higher education; (5) of manual training; (6) of art education; (7) of kinder education; (8) of music education; (9) of secondary education; (10) of business education; (11) of child study; (12) of physical education; (13) of natural science instruction; (14) of school administration; (15) the library department; (16) of special education; and (17) of Indian education; the powers and duties and the number and names of these departments and of the National Council of Education may be changed or abolished at the pleasure of the corporation, as provided in its by-laws.'

The membership consists of three classes: active, corresponding, and associate members. Any eligible person may become an active member upon application indorsed by two active members, by paying an enrollment fee of $2 and the annual dues of $2 for the current year. Teachers and all who are actively associated with the management of educational institutions, including libraries and educational publications, are eligible for active

membership. Only active members have the right to vote and to hold office. All active members are entitled to a volume of the *Proceedings*. Corresponding members, whose number shall not exceed 50 at one time, shall be eminent educators not residing in America. They shall be elected by the board of directors and shall receive the volume of *Proceedings* without the payment of any fee. Associate members pay an annual fee of $2 and may receive the volume of *Proceedings* by formal application. The board of trustees consists of four members, elected by the board of directors for a term of four years, and the president of the association, who is *ex officio* a member during his term of office. Only eleven men have been members of the board by election. The details of officers and of management may be found in full in the volume of *Proceedings* for 1906, or in any later volume.

The several departments engage in the special work of education which their names indicate. The National Council of Education is a deliberative body, whose functions need brief elaboration. One of them is the proposal to the board of directors of suitable subjects of investigation and research and the recommendation of the amount of money that should be appropriated for that purpose. When the board of directors authorizes special studies and investigations the council selects the membership of the committees to make them. Several important reports have issued from such committees and may be obtained by correspondence with the secretary of the association.

The council consists of 60 members, selected from the membership of the association. The board of directors annually elects five members and the council the same number, each to serve for six years and until their successors are elected. All members become honorary members on the expiration of the terms for which they are elected. They are privileged to attend the sessions of the council and participate in its discussions. No state is entitled to more than eight members.

History.—The association was organized in 1857, under the name of the National Teachers' Association. It was an extension of the state association idea to the country at large. To T. W. Valentine, president of the State Teachers' Association of New York, belongs the credit of initiating the movement. In conference with D. B. Hagar, president of the Massachusetts Association, a call for a convention was agreed upon and was prepared by the latter in 1856, in pursuance of which a small number of men gathered in Philadelphia 1857, Aug. 26. The meeting was called to order by Mr. Valentine, who explained its purposes, and a resolution was adopted to the effect 'that it is expedient to organize a National Teachers' Association.' A constitution, prepared by a committee appointed for that purpose, was also adopted. Zalmon Richards, of Washington city, was elected president for

the ensuing year, and J. W. Bulkley, of New York, secretary. Twelve vice presidents, representing as many states, a treasurer, and ten counselors were also elected. Thus was launched an educational enterprise that was to have a most significant influence upon the development of education in the United States. It had enrolled but 43 members, but 12 states and the District of Columbia were represented. Yet its membership consisted of representative educational men and the territory represented was wide enough to suggest a national character.

At the Indianapolis meeting, in 1866, the word 'person' was substituted for 'gentleman,' in the section defining eligibility for membership. Women were thus admitted to full membership. The department feature of the association was introduced in 1870. It was at this meeting, held at Cleveland, that the name was changed to The National Educational Association. Some of the departments had existed previously as independent associations. This was true of the department of normal schools, formerly the American Normal School Association, and organized at Norwich, Conn., in 1858, Aug., and of the department of superintendence, which was previously the National Association of School Superintendents. It was organized at Harrisburg, Pa., in 1865, Aug. The new departments created were the department of elementary education and the department of higher education.

Although the association drew its membership from all parts of the country the attendance at its meetings was small, never reaching the 400 mark in the first quarter century of its existence. The 1884 meeting was the turning point in the fortunes of the organization. The financial difficulties had been extremely embarrassing. It had been impossible to print the addresses without contributions from liberally disposed members. The president for that year, Thomas W. Bicknell, conceived a plan of enlisting the interest of the railway people and the days of poverty were a matter of history. The enrollment reached 2,729. The association was freed from debt and a permanent fund started which now amounts to $155,000. The meeting for the succeeding year, at Saratoga, enrolled but 625, but the Topeka meeting, 1886, mustered 1,197, and the Chicago meeting, in 1887, registered 9,115. While the number varied widely in succeeding years, it has steadily increased, the following being some of the remarkable records: San Francisco, 1888, 7,216; Denver, 1895, 11,297; Washington, 1898, 10,532; Los Angeles, 1899, 13,656; Boston, 1903, 34,983.

The movement to secure a permanent membership was inaugurated at the Denver meeting, 1895. The old scheme by which one could purchase a life membership for $20 and a life directorship for $100 was abolished. In its stead, the present plan of the payment of annual dues, whether in attendance at the meeting or not, was adopted. In consequence the association now has a permanent

membership of about 6,000. It is thus assured of an ample income. At the Washington meeting, 1898, the constitution was so amended as to provide for the employment of a permanent secretary by the board of trustees. He is chosen for a term of four years.

The department of superintendence, although a department of the association, holds its meeting in February. Although the membership is preponderatingly devoted to supervision it is not limited to those thus engaged. The attendance rarely falls below 800 and is usually much more. The proceedings and papers of these meetings appear in the annual volume of the association. In the general meetings of the association more than 800 papers have been presented and published. The department of superintendence has increased this number by fully 500. The remaining departments have contributed about 2,000 discussions of educational questions. There must be added to this aggregate the 250 papers read before the International Congresses of Education in Chicago, 1893.

Reference has been made to the special studies that have been conducted in an exhaustive way by committees composed of experts in the subjects under consideration. They are among the most notable publications of the association. The following reports, among others, have been widely circulated and have had no little influence in determining policies in the fields which they cover: of the Committee of Fifteen on *Elementary Education;* of the Committee of Ten on *Secondary Studies;* of the Committee of Twelve on *Rural Schools;* of the Committee on *Salaries, Tenure of Office and Pensions of Teachers;* on *Taxation as Related to Public Education.*

NATIONAL GALLERY: principal depository of the pictures belonging to a nation. The National Gallery of England is a building in Trafalgar Square, London, finished 1838 at a cost of £100,000, but enlarged 1861, 69, and 76. The nucleus of the National Gallery was the Angerstein collection of 38 pictures, purchased 1824 for £57,000, and a considerable sum is now annually voted by parliament for the purpose of adding to it. This appropriation, usually about £10,000, has been intermitted or reduced in recent years because of special purchase, from the Blenheim collection, of Raphael's *Madonna degli Ansidei* for £70,000, and of Vandyck's *Equestrian Portrait of Charles I.* for £17,500. The various early and late Italian schools are illustrated; there are good examples of Italian art, as Raphael, Correggio, Paul Veronese. There are a few good examples of Murillo and Velasquez and the Spanish school. The great Dutch and Flemish painters, Rembrandt, Rubens, Vandyck, and the others are well represented. Among English pictures most conspicuous are the 50 works of Turner, bequeathed by him to the nation.

NATIONAL GUARD. See MILITIA.

NATIONALISM.

NATIONALISM: name given to a scheme for social and industrial reform, and to the organized effort in its behalf, which has attained large proportions in the United States since the summer of 1888, at which time the movement first took definite shape. The awakening of thought on economical questions, within the last decade, has been extraordinary. Socialism (q.v.), long regarded as the red spectre of desolation, whose adherents could be found only among the oppressed classes or in the ranks of fanatical theorizers, has in late years made thousands of converts among advanced thinkers in Europe and America. It is a noticeable fact that many prominent writers on political economy, in the most enlightened countries, are now either avowed socialists or socialistic in the drift of their speculations. Whether for good or ill, the public mind of America is increasingly influenced by socialistic doctrines. *Progress and Poverty*, the powerful work of Henry George, published 1881, did much to spread this influence: the Nationalists claim that it prepared the way for the reception by progressive thinkers of broader and higher truths in sociology.

In 1888, Jan., Edward Bellamy, a quiet literary man in Chicopee Falls, Mass., gave to the world a romance, *Looking Backward*, in which he pictured an ideal commonwealth, founded on an industrial system of national co-operation and association—a true republic in which should be realized a condition of perfect justice, with equal rights and equal opportunities for all—the dream of all social reformers of the past. Whatever criticisms this book may deserve in regard to the fanciful dressing of the minor details of life under a social system, its economical arguments were certainly so set forth as to produce an immediate and wide impression. This novel had the effect of showing how widespread was the unspoken, often unconscious, dissatisfaction with some manifest tendencies of the present civilization; gathering the floating ideas in the minds of men toward a concrete object of thought and effort.

Boston, which so many times before has been the mother of reform agitations, gave birth to the first organized Nationalist Club of this country. The use of the term 'Nationalist' in a letter of Edward Bellamy, replying to a friend's proposal for the formation of such a club, suggested the title afterward adopted as the permanent designation of this reform party: he had spoken of 'the Nationalist ideas' of his book. After preliminary meetings, a regular Nationalist Club was organized, and officers elected, 1888, Dec. 15. The movement has spread rapidly. England, and Australia even, have felt the impulse. Thriving clubs exist in nearly every state of the Union. A monthly magazine, *The Nationalist*, was established 1889, May: it is owned and controlled by members of the Boston club, and in its first year it attained a subscription list of nearly five thousand.

NATIONALISM.

The Declaration of Principles adopted by the parent club reads as follows: 'The principle of the Brotherhood of Humanity is one of the eternal truths that govern the world's progress on lines which distinguish human nature from brute nature. The principle of competition is simply the application of the brutal law of the survival of the strongest and most cunning. Therefore, so long as competition continues to be the ruling factor in our industrial system, the highest development of the individual cannot be reached, the loftiest aims of humanity cannot be realized. No truth can avail unless practically applied. Therefore those who seek the welfare of men must endeavor to suppress the system founded on the brute principle of competition, and put in its place another, based on the nobler principle of association. But, in striving to apply this nobler and wiser principle to the complex conditions of modern life, we advocate no sudden or ill-considered changes; we make no war upon individuals; we do not censure those who have accumulated immense fortunes simply by carrying to a logical end the false principle on which business is now based. The combinations, trusts, and syndicates of which the people at present complain, demonstrate the practicability of our basic principle of association. We merely wish to push this principle a little further and have all industries operated in the interest of all by the nation—the people organized—the organic unity of the whole people. The present industrial system proves itself wrong by the immense wrongs it produces; it proves itself absurd by the immense waste of energy and material which is admitted to be its concomitant. Against this system we raise our protest; for the abolition of the slavery it has wrought and would perpetuate, we pledge our best efforts.'

The principles and purposes of Nationalism can be best explained by a few extracts from an address by Mr. Bellamy in Tremont Temple, Boston, at the first anniversary of the Nationalist Club, 1889, Dec. 19.—'No fact is better established by experience or more demonstrable by reason than that no republic can long exist unless a substantial equality in the wealth of citizens prevails. Wealth is power in its most concentrated, most efficient, and most universally applicable form. In the presence of great disparities of wealth, social equality is at an end, industrial independence is destroyed, while mere constitutional stipulations as to the equal rights of citizens, politically or before the law, become ridiculous. The vast disparities of wealth afford on every side inhuman contrasts of cruel want and inordinate luxury. In all directions the old ways of legitimate business and steady application are being abandoned for speculative projects, gambling operations, and all manner of brigandage, under forms of law. The consequences of the appropriation of the nation's wealth by a few, and its further concentration by means of corporations and syndicates, have made possible a

policy of monopolizing the control and profits of the industries of the country, never before even imagined as among the possible perils of society.'

The Nationalist program embraces the idea of the progressive nationalization of the industries of the United States; in short, it advocates the ultimate governmental ownership and control of all land, capital, and labor. The following are some of the measures for which the Nationalists believe the country now ready: 1, Nationalization of railroads, whether by constituting the United States perpetual receiver of all lines, to manage the same for the public interest, paying over to the present security-holders, pending the complete establishment of Nationalism, such reasonable dividends on a just valuation of the property as may be earned; or by some other practicable method not involving hardship to individuals: 2, Nationalization of telegraphs and telephones, and their addition to the post-office, with which, as departments of transmission of intelligence, they should properly always have been connected: 3, That the express business of the country be assumed by the post-office, according to the successful practice in some other countries: 4, That coal-mining, which at present is most rapaciously conducted as respects the public, and most oppressively as regards a great body of laborers, be nationalized, to the end that the mines may be continuously worked to their full capacity, coal furnished consumers at cost, and the miners humanely dealt with: 5, That municipalities generally shall undertake lighting, heating, street-car service, and such other public services as are now performed by corporations, to the end that such services may be more cheaply and effectually rendered; that a fruitful source of political corruption be cut off, and a large body of laborers be brought under humaner conditions of toil. It is to be understood that all nationalized and municipalized industries should be conducted at cost, for use and not for profit.

Until the present time, 1890, the movement throughout the United States has been guided from the parent club in Boston. Preliminary steps have been taken, however, for organization of a National League, with a settled policy for the whole country. It has been the especial aim of Nationalism to interest and attract the educated classes; and with these thus far it has had its chief success.

NATIONAL PARKS OF THE UNITED STATES. See YELLOWSTONE PARK; YOSEMITE; etc.

NATIONAL POLITICAL CONVENTION. See CONVENTION, NATIONAL POLITICAL.

NATIVE, a. *nā'tĭv* [L. *natīvŭs*, that has arisen from birth, born—from *nātus*, born: F. *natif* and *native*, native]: not acquired; produced by nature; belonging to the place or country; pertaining to the time or place of birth; applied to a metal or other substance when found in nature almost in a pure state as distinguished from the same substances procured from ores in which they exist variously combined, e.g., native silver, native copper, native arsenic, etc.: N. one born in a place; a thing not foreign; that which grows in the country; in *OE.*, offspring. NA'TIVELY, ad. *-lĭ*. NA'TIVENESS, n. *-nĕs*, state of being native. NATIVITY, n. *nă-tĭv'ĭ-tĭ*, birth; the time, place, or manner of a person's birth; among *astrologers*, a representation of the position of the heavenly bodies at the moment of one's birth, the result being supposed to indicate future destiny. THE NATIVITY, the birthday of our Lord; Christmas day. TO CAST ONE'S NATIVITY, to represent the position of the heavenly bodies at the moment of one's birth.—SYN. of 'native, a.': natal; natural; original; congenital; indigenous; unartificial.

NATIVISM: a term loosely applied in philosophy to views which, in contradiction to empiricism (q.v.), hold that certain elements of experience are inborn and not acquired. Our knowledge of necessary truths would illustrate this sort of thing. For example, things equal to the same thing are equal to each other. See EMPIRICISM.

NATOLIA. See ANATOLIA.

NATTY, a. *năt'tĭ* [from Eng. *neat*]: in *familiar language*, smart; spruce.

NATURAL BRIDGE, THE: rock and land formation in Rockbridge county, Va., affording natural passage for a public road across a chasm 215 ft. deep and 60 ft. wide. The rock is highly flinty limestone, in massive strata, showing no signs of wearing away, or of formation by any recent cutting force of water. The upper surface of soil and trees not only gives no sign to the passer of the immense gorge over which it leads, but the bridge is at the general level of a valley of the Blue Ridge region on one side, and conducts to a sightly hill on the other, from which a grand view of the mountains for a sweep of 90 m. can be had. The view of the vast structure from below is of a grandeur exceeded by few places in America. It was discovered 1759; Washington visited it while surveying for Lord Fairfax; and 1774 George III. made a grant of it and 157 acres of adjoining land to Thomas Jefferson, who, when president, established there a log-cabin in charge of a negro, 'Patrick Henry,' and wife, as a place of call for travellers.

BRIDGE CAROLINE, SAN JUAN COUNTY, UTAH.

Span, 350 feet at base of abutments. Height, 182 feet from stream to top of causeway. Thickness, 60 feet top of causeway to under side of arch. Width, 60 feet, narrowest place on causeway. Altitude at base, 6,000 feet. Spans White river, at junction of White and Armstrong canyons. Color dark red. There are two other bridges near of equal magnitude.

NATURAL HISTORY.

NATURAL HISTORY: in the widest sense, all natural science, having the whole of creation for its subject: in this sense the term was employed by the philosophers of antiquity. But it is now applied no longer in this widest sense, but limited to those branches of science which relate to the crust of the earth and its productions. Of these, geology and mineralogy have for their subject inorganic portions of creation; botany and zoology, the various branches of which are often pursued as separate sciences, with physiology, have for their subject organized creatures. N. H. takes cognizance of the productions of nature, and of their relations to each other, with all the changes on the face of the earth, and all the phenomena of life, both animal and vegetable. It derives assistance from other sciences, particularly chemistry and natural philosophy; and some of the branches of chemistry also may be regarded as branches of N. H. When man himself is considered as a subject of scientific study, psychology must be added to the branches of N. H., but in the term as commonly employed this can scarcely be said to be included. Indeed the term is now used frequently with a limitation of its subject to the animal kingdom.

In every department of N. H., classification is of utmost importance, and scarcely less important is a scientific nomenclature suited to the classification. The subjects of study are so incalculably numerous, that an arrangement of them in well-defined groups is necessary to any considerable attainment in the knowledge of them; and it is only by systems of classification which arrange smaller groups in larger, and these in larger and larger again, that N. H. has been brought to its present state. The very division of N. H. into different sciences is a result of such a classification, and implies a recognition of the largest and highest groups. It is not always in the establishment of these groups that the greatest difficulty is experienced. The primary distinction of all the subjects of N. H. into organized and unorganized, or into those having life and those not having life, presents itself readily to every mind. And equally natural and necessary is the distinction of organized beings into Plants and Animals, however difficult it has been found to draw the precise limit between the lowest of plants and the lowest of animals. Another distinction readily presents itself to the student of living beings, in the kinds which retain the same characters from one generation to another. But here arises one of the most important of all the questions of N. H.—what a *species* is, and how it differs from a *variety*. For this, see SPECIES. But much difference of opinion as there is on this point, the common and long-prevalent notion may be assumed, as sufficient for guidance in all that relates to classification, that those are distinct *species* which cannot by any change of circumstances —or, let it be said, by any *ordinary* change of circumstances, and within any *moderate* period of time—be so

modified as to be transmuted one into another; while those are only *varieties* of which the modification and transmutation can be thus effected. Thus, in botany, *Brassica oleracea* is a species, of which kale, cabbage, cauliflower, broccoli, Brussels sprouts, etc., are varieties. Species grouped together, according to their natural affinities, form *genera;* but a *genus* does not necessarily consist of more species than one; for, while some contain hundreds of species, others, apparently very distinct, contain only one yet known to naturalists. The distinctions by which genera are separated are of course arbitrary, and are admitted to be so by those who deny that the distinctions between species are arbitrary, or that there is any uncertainty about them but what arises from the imperfection of our knowledge; for at present it must be admitted on all hands that the uncertainty is in innumerable instances very great, what are species and what are varieties. The great object, however, in the formation of *genera* is that they shall be accordant with the facts of nature; and so in regard to the larger or higher groups composed of associated genera, as tribes, families, orders, classes, etc. But in all this, the great difficulty is that affinities exist on many sides; and that groups cannot be satisfactorily arranged in the order of a series, but often rather as if they radiated from a common centre; while otherwise viewed, the same groups might seem to radiate very differently from another common centre. A *natural system* is one framed with the utmost possible regard to all these facts; an *artificial system* fixes on one class of facts and proceeds upon it, in disregard to all others (see BOTANY).—In the inorganic departments of nature, a *species* is of course something different from what it is in the organic. But classification still proceeds on the recognition of facts in nature itself, which it is sought to exhibit in the groups that are formed. See MINERALOGY.

The nomenclature of natural history, so far as it relates to organic beings, continues essentially as established by Linnæus (see GENUS). The names have in many cases been changed, but not the mode of nomenclature. See NATURE STUDY.

NATURALISM: a term used in connection with that type of philosophical belief which finds it possible to explain all the phenomena known to us, both mental and physical, by reference to natural processes after the manner of the natural sciences. In practice the view often approaches Materialism (q.v.), and more justly is to be identified with the attitude of Positivism (q.v.). A late use of the term would confine it to the effort to find philosophical explanations only for such events as are within the range of every-day natural life experience. In theology naturalism is opposed to Theism, in that it implies the non-existence of a personal God as Creator and Controller of the universe. See NATURAL THEOLOGY.

NATURALIZA'TION: act of placing an alien in the position, or investing him with the rights, of a natural-born citizen. In Britain, the present arrangements with reference to N.—by which the old rule that British allegiance is indelible has been changed—are embodied in the N. Act (1870) and the N. Oath Act (1870). By the former of these statutes it is provided that an alien who has resided in the United Kingdom for a term of not less than five years, or has been in the service of the crown for a term of not less than five years, and intends, when naturalized, either to reside in the United Kingdom or to serve under the crown, may apply to one of her majesty's principal secretaries of state for a certificate of N. The applicant is bound to adduce such evidence of his residence, or service, and intention to reside or serve, as shall satisfy the sec. of state, who may, with or without reason assigned, give or withhold a certificate. No appeal lies from his decision, but his certificate takes no effect until the applicant has taken the oath of allegiance. An alien, to whom a certificate of N. has been granted, is entitled to all political and other rights, powers, and privileges; and is subject to all obligations to which a natural-born subject is entitled or subject in the United Kingdom, with this qualification, that he, when within the limits of the foreign state of which he was previously a subject, is not deemed a British subject unless he has ceased to be a subject of the foreign state by the laws thereof, or by a treaty to that effect. Aliens previously naturalized may, on application, obtain certificates. A British subject who has become an alien, in pursuance of this act (see ALIEN), may apply for a certificate of readmission to British nationality on the same conditions as an alien by birth. The sec. of state has, in this case, the same discretion; and an oath of allegiance is likewise required. The privilege of readmission, like that of admission to British nationality, requires that the recipient shall have ceased to be a subject of the foreign state. In the colonies, the powers of the sec. of state are conferred on the governor.

In France, 'La grande Naturalisation' confers political privileges; 'La petite Naturalisation' gives all the private rights of a French citizen, and it has been doubted whether even public rights are not included in it. In 1867, the term of residence was reduced from ten years to three. A subject of France loses his native character by N. in a foreign country, or acceptance of office abroad without permission of the state, or even by establishing himself permanently out of his country. He may recover his rights by renunciation of his foreign office or domicile.

In Prussia, the higher administrative authorities can naturalize any stranger who satisfies them as to his conduct and means of subsistence. Nomination to a public office confers N. Prussian nationality is lost—(*a*) by discharge on the subject's request; (*b*) by sentence of the

competent authority; (*c*) by living ten years in a foreign country; (*d*) by marriage of a female subject with a foreigner.

In Austria, the authorities may confer the rights of citizenship on a person, after ten years' residence within the empire, who has been allowed to exercise a profession. A public functionary becomes thereby invested with rights of citizenship; but admission into the army has not this effect.—In the kingdom of the Netherlands, the power of naturalizing rests in the crown.—In Russia, N. is effected by taking an oath of allegiance to the emperor.

The general principle under which acts of N. fall in the United States, is that of welcoming all proper candidates for citizenship, without permitting improper intruders to enter to the peril of public interests. English traditions were those of exclusion of foreigners from all political privileges, and this English tradition naturally permitted some of the first New England colonists to indulge combined religious and social anxieties by restrictions on citizenship, which have been referred too much to religious rigor because they followed church lines. No such restriction ever existed in the Pilgrim or Plymouth colony, the basis of which was separation from a state-controlled church and entire liberality of all to each as well as liberty of all under the state. It was the general principle of the Plymouth colony to accord all rights and privileges to whomsoever carried himself with civility and humanity, irrespective of his nativity or religion. In the Puritan colonies, where none had had the Pilgrim thorough weaning from the traditions of English church and magistracy, the assumption naturally made and acted on was that of strict exclusion, and the advantage easily taken of this by the more rigid religious leaders resulted in notable political narrowness. Yet it was English even more than it was Puritan, and George III. acted on it in the obstructing of the paths to colonial citizenship which was one of the crimes laid to his charge by the Declaration of Independence. The colonial legislatures very early engaged in making these paths open and easy. Md. 1666 specially naturalized French Prot. refugees and the Dutch from Cape Henlopen, and later passed laws to promote the N. of aliens. Virginia began 1671, and passed several acts, till the time of the revolution, opening and securing citizenship to aliens. In 1683 N. Y. passed an act permitting all actually resident foreigners professing Christianity to become citizens on taking the oath of allegiance. In 1693 S. C. by special act made citizens of the French Protestants who had become settlers, and in 1696 passed a general act for the N. of aliens. By a special act, 1700, Del. took into full citizenship all Swedes, Dutch, and other aliens who had become settlers before the English gained possession, and authorized the gov. to receive into citizenship any alien settlers who would swear fidelity to the king and

the province. In the same year Penn. passed a N. law. In Mass. a chancery decree of *scire facias*, entered 1684, June 21, and confirmed Oct. 23, swept the Anglo-Puritan fences of the commonwealth entirely away, in the interest directly of the king's church, but with the ultimate result of a pattern of open liberty at Boston and Salem like that of the Mayflower Pilgrims of Plymouth. For the most part, in England, colonial liberality in making citizens was reprehended, as encroaching on either royal or parliamentary power over colonial development. An act of N. Y. 1715, naturalizing foreign Prot. inhabitants in a mass, was reported to the English board of trade by the king's atty.gen., Northey, as not allowable, though to special acts dealing with each individual by name there was no bar. This caused some 14 N. Y. acts to be passed before 1773, entering an immense number of names on the rolls of citizenship. In 1740 parliament sought to take the matter out of the hands of the colonies by an act requiring seven years' residence without an absence of over two months, and a taking of the Prot. sacrament by all except Quakers and Jews. The illiberality of the act defeated the design of parliament, the colonies steadily pressing on with liberal laws until the revolution cut them adrift from England. During the revolution, the several states separately exercised the power to admit aliens to state citizenship, and by the articles of confederation a very important step toward national unity was taken by a clause declaring that free citizenship in any state should secure the same in every state, a provision which would have made trouble if the doctrine of independent state sovereignties had not yielded to that of a national union, in the constitution of which all the states without question or debate gave to the nation the right to open or to shut the path to American citizenship. To open this path, at once widely and wisely, was a supreme ideal of Washington, impressed by him many times upon the army, the congress, and the people; and 1790, Mar. 26, at the second session of the first congress, an act of the most liberal character was passed, requiring only two years' residence in the country and one in the state for a free white alien to have the right to become a citizen. An act of 1795 required five years' American residence, and a period of three years after a declaration upon oath of intention. These periods were made 14 years and 5 years by an act of 1798, but reduced to 5 and 3 in 1802, and in 1824 made 5 and 2. The separate states, notably Va., sought to exercise concurrent jurisdiction, and even made conflicting laws, until the supreme court of the United States, 1817, ruled that the power to naturalize was vested exclusively in congress—a decision not acceptable at first, but ultimately recognized in all the states as a correct interpretation of the constitution. It is, however, the right and the practice of states, especially those of the new west, to grant state citizenship to many not yet enjoying U. S. rights. Under the revised

statute of 1874, the terms of N. are five years' residence in the United States, one in the state or terr., and due application to a proper court two years previous to admission. The last is dispensed with in the case of persons who came into the country under 18 years of age. An act of 1862 gave aliens of one year's residence the privilege of naturalization, if they had passed a term of honorable service in the army of the United States, regular or volunteer; and 1872 a similar act gave the privilege to any seaman who has made a proper declaration of intention and thereafter passed three years of good conduct in the merchant service of the United States. For a minor, the declaration of intention is not required. By an act of 1872, July 14, it is felony to obtain or knowingly to assist in obtaining a fraudulent N. The question of the citizenship of a child born out of the United States turns on the citizenship of the father at the date of the birth; and that of the citizenship of persons who were minors at the time of the father's N. has been repeatedly decided—by Chancellor Walworth (N. Y.) 1840, by Chief Justice Daly (N. Y.) 1847, by the supreme court of Ark. 1850, and by that of Fla. 1865—in accordance with the early view of Kent, in his *Commentaries*, that the child's citizenship arises with the father's. In the case of wives the courts repeatedly held that the husband's N. did not carry with it that of the wife, but an act of 1855, Feb. 10, provided that the two should be one in this respect, and no separate N. of the wife be required. In the case of an alien dying before carrying out a declared intention to be naturalized, the widow and children may become citizens by taking the oath of allegiance. This applies to adult as well as minor children. No alien of a country at war with the United States can be admitted to citizenship while the war lasts. The case of persons not 'free white,' as Indians, Chinese, and Africans, was decided in Cal. against the Chinese, and in the great Dred Scott case, 1856, against the Africans; but under special treaties—with the Choctaws 1830, Sep. 27; with the Cherokees 1836, May 23; and in the treaties under which La., Fla., and Cal. were acquired—Indians have been conceded the right to become citizens; and since the 14th amendment to the U. S. constitution was adopted, 1868, and an act of 1870, July 14, pursuant thereto, African aliens may be naturalized, and Africans not aliens enjoy the same rights as if white.

A treaty was concluded 1870, May 13, between the United States and Great Britain, according to the provisions of which citizens or subjects of either of these, naturalized as citizens or subjects of the other, shall be deemed to have put off their original nationality and put on that of their new residence; and in case of resumption of the old residence shall be allowed to drop the new nationality and resume the old. To the same general effect are the treaties with Prussia, made 1868, Feb. 22; with Bavaria, 1868, May 26; with Mexico, 1868, July 10; with Baden (grand duchy), 1868, July 19; with Würtemberg,

1868, July 27; with Hesse (grand duchy), 1868, Aug. 1; with Belgium, 1868, Nov. 16; with Sweden and Norway, 1869, May 26; with Austria-Hungary, 1870, Sep. 20; with Denmark 1872, July 20; with Ecuador, 1872, May 6.

NATURALIZED: term in botany and chemistry, for those plants and animals which, having been introduced into a country by man, have established themselves there so as to exist without his care. A plant or animal is never said to be naturalized so long as it exists merely in a state of cultivation or domestication, but is so when it becomes truly wild, and, unaided, competes successfully for a place among those which are indigenous to the country. Thus, the horse is not naturalized in Britain, or in most of the countries in which it is most highly valued; but both the horse and the ox may be said to be naturalized in S. America. Many of the plants now most characteristic of s. Europe are sometimes said to have been originally introduced from the East; and some that are abundant in many parts of Britain were in all probability brought from the continent of Europe. Some of these almost evince their foreign origin by growing chiefly near ruins, or in places which have long been the seats of human habitation. Many plants now naturalized in Britain appear to have been brought originally for medicinal use, though now disregarded. In many cases, however, naturalization has taken place without any attempt by man to introduce the plant even for cultivation; thus many European weeds are now common in N. America, the seeds having found their way thither with those of more valuable plants, or in some such accidental manner. The same thing has taken place as to animals. Thus, mice and rats find their way from one country to another; thus the bed-bug found its way at no remote date to Britain; other insects have been even more recently introduced with foreign productions of different kinds; and a mollusk (see DREISSENA), previously unknown, has established itself in some British rivers and canals. The pheasant is an instance of naturalization in Britain, designed and successfully accomplished by man. An *Acclimatization Society* has recently been formed in London, which has for its object the naturalizing, rather than what may more strictly be called the acclimatizing, of animals deemed suitable and desirable. It is unquestionable that much may be done by naturalization of animals, not only to render rural scenes more attractive, but also to increase their economical productiveness. For an important, but neglected, department of this subject, see PISCICULTURE.

NATURAL LAW: any law which is thought of as not the product of human volition, but as innate to the phenomena concerned. The conception is made use of in an ethical sense in earlier writings on political philosophy, but has its chief contemporary interests in the generalizations offered by modern science on the behavior of the physical world. The law of gravitation may serve to illustrate such use of the term. Natural laws are not thought of by careful thinkers as anything other than human formulations of uniformities which are observed in the action of natural forces. The laws as formulated represent ideal abstract statements of conditions which may never in nature be actually realized. Thus the formula which states the principle of the attraction of masses to one another disregards possible magnetic and electrical conditions which in any actual case would enter to disturb the relations formulated under the law of gravitation. The formulations of natural laws are constantly undergoing modification, owing to increased accuracy of scientific knowledge. Meantime the relations to one another of the phenomena formulated are conceived as remaining unchanged. Just in the degree in which science is able to discover and state natural laws is it possible to predict future events. The achievements of natural science in this direction constitute the great intellectual conquests of the present generation

NATURAL REALISM. See REALISM; COMMON SENSE.

NATURAL THEOLOGY: branch of moral science which concerns itself with the evidences for the existence of God, drawn from an inquiry into the constitution of the universe. It is believed, by the majority of philosophical thinkers, that these evidences, even aside from a special historical revelation or manifestation of God, warrant the belief in a Being of infinite power, wisdom, benevolence, and justice. There are, however, philosophers of eminence who deny that there is such a thing as natural theology, who say that nature, at the best, gives forth an uncertain sound regarding the existence of a Supreme Being, and that a logical demonstration of such existence is impossible, and has always broken down. This view is held, e.g., by atheists like David Hume, and the recent Scoto-Oxonian school of metaphysicians—a devoutly Christian school—of whom the principal representative is Dean Mansel. The standard English work on the subject has long been Paley's *Natural Theology* (Lond. 1802; new edition by Lord Brougham and Sir Charles Bell 1836). The Bridgewater and Burnett treatises also are contributions to this branch of science.

NATURE, n. *nā'tūr*, or *-chûr* [F. *nature*—from L. *natūrā*, the natural constitution or property of a thing—from *nātus*, born, produced: It. *natura*]: the qualities or properties which make a thing what it is; a native character; essential qualities; disposition of mind; the estab-

lished order of created things; the power which has created and which presides over all things, being the *effect* put for, or associated with, the *cause;* natural affection or reverence; sort, species, or kind; sentiments or images conformable to truth and reality. NATURAL, a. *năt'ū-răl,* or *năt'chû-răl,* produced or effected by nature; derived from nature; not acquired; not artificial; true to life; not forced or far-fetched; dictated by nature; happening in the ordinary course of things; not revealed, as religion: N. one born destitute of the ordinary powers of reason and understanding; an idiot. In *music,* a note belonging to the diatonic scale of C, and neither elevated by a sharp nor depressed by a flat. When a note has been so elevated or depressed, the natural sign ♮ prefixed to it on its recurrence restores it to its place on the scale. When music is written on a key with a signature of sharps or flats, it is the office of the natural sign to counteract the signature as regards the note to which it is prefixed. NAT'URALLY, ad. *-lĭ,* according to nature; without affectation; spontaneously. NAT'URALNESS, n. *-nĕs,* the state of being natural or as produced by nature; conformity to truth and reality. NAT'URALIZE, v. *-răl-īz,* to invest a foreigner with the rights and privileges of a citizen or subject; to acclimatize. NAT'URALIZING, imp. NAT'URALIZED, pp. *-īzd:* ADJ. invested with the privileges of a native; in *bot.* and *zool.,* originally introduced from a foreign country, but now apparently become native (see above). NAT'URALIZA'TION, n. *-ĭ-zā'shŭn,* the act of investing a foreigner with the rights and privileges of a native subject; the state of being so invested (see above). NAT'URALISM, n. *-ĭzm,* a mere state of nature: in *philos.* and *theol.,* the doctrine of those who deny miracles and a revelation from God, accounting for all things that exist by the necessary action of forces without intelligence. Lucretius and Epicurus, with other of the anc. philosophers, held to naturalism (see MATERIALISM). NAT'URALIST, n. *-ĭst,* one versed in the natural history of animals. NATURAL CHILD, a child not born in wedlock; a bastard. NATURAL HISTORY, scientific description of the earth and its productions—often limited to the animal kingdom only (see above). NATURAL MAGIC, the employment of the powers of nature to produce effects apparently supernatural. NATURAL ORDERS, in *bot.,* groups of genera resembling each other, or having organs in common. NATURAL PHILOSOPHY, the science of material bodies in regard to rest and motion, and of the forces, or combination of forces, which produce these results; branch of physical science which has for its subject those properties and phenomena of bodies which are unaccompanied by any essential change in the bodies themselves: now usually called 'Physics' (q.v.). NATURAL PROJECTIONS, perspective delineations of a surface on a given plane. NATURAL RELIGION, religion so far as it is discoverable by reason

without the aid of what is called supernatural revelation. NATURAL SCALE, in *music*, a scale written without sharps or flats. NATURAL SELECTION, process ascribed to nature by which, as is asserted, the strongest, swiftest, etc., survive and take the place of the weaker, etc. (see DARWINIAN THEORY). GOOD-NATURED, having a temper not easily ruffled. ILL-NATURED, having a temper naturally bad. IN A STATE OF NATURE, naked as when born; without clothing of any kind.—SYN. of 'natural, a.': inartificial; illegitimate; spontaneous; unacquired; unforced; unrevealed; tender; unaffected; native; essential; characteristic; legitimate; normal; regular;—of 'nature': kind; character; species; creation; universe; stamp; shape; mold.

NATURE-PRINTING: process by which engravings or plates answering thereto are produced by taking impressions of the objects themselves, and printing from them. There is some dispute as to the inventor of this art; Denmark claims it for a native of Copenhagen, Peter Kyle, a goldsmith, who died about 1833, leaving the MS. description of his invention in the archives of the Royal Collection of Engravings in that capital. It is, however, admitted that no use was made of his invention. In 1853, Alois Auer, director of the state printing establishment of the Austrian empire, published his process, and also some very beautiful works illustrated by this art. About the same time, in England, G. W. Aitkin made known his discovery of an exactly similar process, and showed some very beautiful plates of feathers, ferns, etc. But whatever other claims may be advanced, it is certain that Alois Auer has right to be called inventor and first practical applier of the invention. The process is very simple, as practiced by Auer; but it cannot be applied to any objects except those with tolerably flat surfaces, e.g., dried and pressed plants, embroidery and lace, and a very few animal productions. The object is placed between a plate of copper and another of lead, both worked smooth and polished; they are drawn through a pair of rollers, under considerable pressure—Auer says 40 to 50 tons; then, when the plates are separated, it is found that a most beautiful and perfect impression of the object has been made in the leaden plate. This may be used directly as an engraved plate, if only a very few impressions are wanted; but as it is too soft to resist the action of the press for practical purposes, a fac-simile of it by the electrotype process is obtained in copper and used as the printing-plate. The best practical use to which nature-printing has yet been applied is the multiplication of patterns of lace and other figured surfaces, either in textile materials or metals, for trade purposes. Lace-prints especially are so exactly like the originals that the most fastidious can require nothing more; hence the cutting up of valuable pieces of lace for patterns has been saved.

NATURE-STUDY: *Historical Statement.*—The term nature-study, which from its form would imply no apparent difficulty as to content, has in practice at one time and another included and excluded certain portions of nature in such a way as to bring about much confusion as to the real meaning of the term. Many of the people interested in this subject point to the older object teaching as the predecessor of modern nature-study, and at first glance this would seem to be true. Object teaching, however, was introduced primarily in response to a feeling (1) that book work did not offer the needed opportunities for oral instruction, and (2) that education was not sufficiently practical. One writer (Thomas Morrison) prominent during the period of the introduction of object teaching expresses the general attitude toward object teaching and its need as follows: 'Textbooks are mainly valuable in that they present a connected and systematic view of any subject, and supply the various definitions and technical terms employed in connection with it. . . . We refer to incidental oral lessons upon various portions of natural history, natural science, and . . . common things. . . . The little world in which the child lives, his home, his food, his garments, the air he breathes, the various operations which he sees going on around him, are carefully and most religiously shut out from school. . . . In all these oral lessons the knowledge acquired should be directed to practical purposes. Our education is too formal. It is too much shackled with absurd conventionalities. We give our pupils much knowledge, but little wisdom. . . . We do not speak here of the attempt which some hair-brained visionaries have made to convert the school into a general workshop, where the boys are taught shoemaking, tailoring, and other trades; and where the girls are trained to bake and wash, and to perform such little domestic operations. We have already lifted up our voice in solemn protest against the introduction of such things into the elementary school.'

But 'object teaching' as such was always fragmentary, often didactic, and proved insufficient, and was the object of much fully deserved derision. Whether the advocates of 'object teaching' realized its insufficiency and began the work of transforming it into nature-study, as is claimed by some, or whether the change was begun by persons hitherto unassociated with the movement, is a point for controversy. It seems evident that the latter is true, and that Louis Agassiz is of all men the one most largely responsible for initiating the true nature-study movement in the United States.

That there was already a widespread interest in the nature-study point of view of the sciences for which Agassiz stood as exponent, was shown by the fact that when in 1873 this great nature teacher announced a summer school of natural history to be held on Penikese

Island, hundreds of applications were sent to him by those who wished to be students in his school in the open field. From these hundreds Agassiz selected 50, 30 men and 20 women, arranged an old barn for their laboratory, and started them in their work. It is significant to note that these chosen students represented a wide range, both geographically and in educational interest, this doubtless being arranged to meet Agassiz' desire expressed afterward to these students, that each should go out into a separate region and should become a missionary for the spirit of first-hand study of nature. That Agassiz believed in the modern point of view of using the economic, industrial, and social experiences of life as a point of departure in his work is indicated by a statement from David Starr Jordan, who was one of the 50 chosen students at Penikese: 'He would often give us a lecture while we sat at the table, frequently about some fish or other creature the remains of which still lay on our plates.' That Agassiz had had experience with object teaching is shown by a further quotation from Dr. Jordan's notes taken in Agassiz' lectures at Penikese. 'In 1847, I gave an address at Newton, Mass., before a teachers' institute conducted by Horace Mann. My subject was grasshoppers. I passed around a large jar of these insects, and made every teacher take one and hold it while I was speaking. If anyone dropped the insect I stopped till he picked it up.'

It is quite evident, therefore, that object study was the chronological antecedent of nature-study. But it must be remembered that this object teaching was introduced primarily through the efforts of professional teachers, and that the kind of study of nature which really put meaning into teaching about 'common things' and so greatly extended it that it may even be doubted if the older ideas of object teaching are present at all in this modern movement, received its most potent early initiative from the great scientist Agassiz and his band of students and co-workers. It is true that these people were mainly students of special sciences, but they were constantly and effectively admonished by their teacher to maintain and encourage in their students the spirit of true acquaintance with nature. These men and women carried into their many fields this spirit of their teacher, expressed by him as follows: 'The book of Nature is always open, and all that I can do or say shall be to lead young people to study that book, and not to pin their faith to any other.' This, which was mainly the modern nature-study point of view, although not expressed by means of the modern term, and although at that time applied to the study of definite sciences, nevertheless affected the teaching in elementary schools and probably began the true nature-study movement within them.

In Boston, Alpheus Hyatt and Lucretia Crocker car-

ried this work into the common schools. In Oswego, N. Y., Mr. H. H. Straight carried out his ideas as to correlation of so-called nature subjects and geography, and later from 1883 until 1886 continued this work in the Chicago Normal School (at that time the Cook County Normal School). In 1889, through the influence of Francis W. Parker, W. S. Jackman introduced into the Chicago Normal School organized courses in 'elementary science,' which courses Mr. Jackman, during the previous year had prepared for introduction into the schools of the city of Pittsburg. During this same year A. C. Boyden and others prepared a course in 'nature study' for use in the Bridgewater, Mass., Normal School, where for some time somewhat unorganized teaching in nature-study had been carried on. Up to that time the term 'elementary science' seems to have been the one used in printed outline prepared for this work, though the term 'nature study' doubtless was often used in discussions. L. H. Bailey, himself an important factor in the history of the subject, is authority for the statement that, 'About 1889 the term nature-study was used independently by Frank Owen Payne. He compounded it, by using the hyphen, at the suggestion of A. N. Kellogg.' To many persons it seems that the term 'Natural History' which is often used more fully expresses the real content of the subject. Moreover, that term has the advantage of historically greatly antedating both 'nature-study' and 'elementary science'; but the term 'nature-study' seems to have become quite firmly established.

The Aims of Nature Study.—Almost all young children possess an inherent and active interest in the phenomena surrounding them. Inherent inquiry is one of the strongest foundation stones of all education. This inquiry is, however, an expression of a desire to know what things are, what they are doing and how they are doing it, and not the desire to give things a scientific classification. In many cases attempts to substitute formal scientific work for that kind of nature-study which satisfies, extends, and gives meaning and value to the spirit of inquiry, has deadened this spirit; instead of quickening and extending it, quite the opposite effect has been produced. The average man or woman of mature years is much less interested in the scientist's point of view of natural phenomena than he is in those points of view which make natural phenomena touch the lives of people in general. Science itself is coming to recognize this attitude of the public, and the effect that this recognition is having on scientific work and publications is marked and is due to become much more so within the next few years. Science knowledge is beginning to be presented in a form that makes it a part of general literature, not merely a literature for the 'initiated.' The very great value of popularized science has been obscured because so many of those who attempted to

popularize it knew so little of it. It will soon be recognized that the interests of science itself demand that true science be presented in a form that is accessible to the general public. Its body of knowledge forms so large a part of the materials of every-day hought that proper presentation will add abundantly to the general dignity of science in the public mind.

If, for presentation to men and women, technical forms of treatment must give way to a treatment that is within the scope of people's experiences, much more must the same be true in the public schools. The interests and the abilities of the children and not the needs of an organized science must guide us in relating nature to problems in education. If we start from the point of view of children's interests and work out from those into new and related interests, and gradually more intricate interests, we shall cause to grow rather than cause to atrophy that spirit of wanting to know, which is so nearly universal. Therefore we state the first purpose of nature-study as being to stimulate and extend inherent inquiry into nature.

True inquiry involves care as to the results of the inquiry. Not very much can be done in establishing a spirit of wanting to know the truth about nature unless there has been some experience in securing really accurate, though possibly general nature knowledge. One of the greatest obstacles to overcome in establishing a good system of nature-study teaching is to be found in the failure to raise to its true importance the necessity of having the results of inquiry just as accurate as the phenomena observed make possible. Inquiry has so often met fictitious answers that the inquirer has deserted the field. Young people as well as older ones are quick to lose interest in pursuits that do not yield results that are trustworthy. Nature-study offers exceptional opportunities for developing safe and economic habits of arriving at justifiable conclusions, and offers equal opportunities for dissipating good habits that may have been formed elsewhere. Materials must be observed in an attempt to determine what is true, not what it would be interesting to have true. Imagination is profitably used in contemplating what in the past may have been true, what in the future may become true, or what under different circumstances would be true, but such scientific imagination must always be ordered by probabilities as based upon some knowledge, not upon a wild, unbased guess. Nature-study work does not include the constant drudgery of details which kills the spirit of inquiry, but does include enough to put true significance and trustworthiness into observation. The second general aim of nature-study, therefore, is so to direct the processes of inquiry that the results may be definite and trustworthy.

It cannot be argued that a careful study of nature is certain to produce an attitude of mind that will always

be secure against dangers of false or hasty conclusions from a small number of data, or against those of the all-too-common practice of rendering judgments in the entire absence of data. All the strength of true nature study, however, is thrown against habits of unfounded thinking, and finds much of its excuse for existence in developing what Professor L. H. Bailey calls the ability of 'seeing what one looks at and drawing proper conclusions from what one sees.' In some localities many of the inhabitants take unquestioningly the opinions of the minister or of the wealthiest man of the community as final upon questions concerning which the minister and the wealthy man have less basis for their conclusions than dozens of the less respected neighbors may have. It may be, however, that the qualities which gave position to these men are such as to give them a safe attitude of mind toward questions in general. If, however, a larger number of the people were in the habit of observing, combining observations, and formulating and testing conclusions relative to the phenomena of nature, it seems that there would be less tendency to accept opinions that are based upon nothing beside the authority of position.

In this connection it should be recognized that the kind of educational systems that have prevailed have been successfully accused of failing to prepare in the best way young men and women for social efficiency. Our business offices and industrial enterprises are afraid of the product of the high schools and colleges, because the kind of education given too often leads away from rather than into any business except that of the teachers who are conducting these schools. Young men and women are taught as if the sole aim is to give them the sort of mastery of subjects that will enable them to continue to teach these subjects, and then with this sort of educational equipment the businesses of the race are asked to accept these people, and use them. Of course, the discipline of proper thinking may help in a new field, but the trouble has been that the fields studied are too largely unrelated to the fields of actual life work, so that the methods are not easily transposed. Nature, however, touches in some way all business and all industries, and proper attitudes of mind used in nature-studies need little or no transposition when the boy or girl begins his office or industrial work. It seems high time that our educational systems should recognize these fundamental facts, and use them in meeting the needs of our modern civilization. If we do not, we cannot complain if the people put their boys and girls into special schools that are designed to give distinctly practical education.

Our education at present omits the greater part of that actual experience on the part of the learner which is essential to making school work touch life work. Unless such experience precedes or accompanies school work of the more formal kind to which we have become accus-

tomed, it is with great difficulty that this work can be made to have any significance to the pupil. If we depend upon the hope that the work shall acquire significance to him when he gets into his later life occupation we deprive him of one of his chief educational advantages and fail to furnish him with the logically inherent interest which his work really possesses. Special education in the arts and crafts cannot have the most helpful results unless they are based upon experience in contact with much of the phenomena of nature.

In order that the first purpose stated above may be met, it is evident that nature-study must lead us into a study of things which, while stimulating inquiry and developing habits of dependable thinking, will give us enjoyment and useful and interesting knowledge. The enjoyment aspect of nature must always be given a prominent position. It may be no more than the pleasure of being out of doors, or in company with rocks and hills and plants and animals. It may be the enjoyment of a wider speaking acquaintance with nature and of knowing just for the sake of knowing. It may be the enjoyment of the beauty of living and lifeless things. It may be enjoyment found in solving the problems nature presents. It may come through a feeling of possession of useful knowledge, and a feeling of mastery over things that are of utility to men. Much of the nature work is arranged primarily that it may offer opportunities for new pleasures, it being known that to truly enjoyable work many values other than pleasure are added.

Nature-study materials should also make possible a large body of knowledge that is useful in the broadest sense of that term: Knowledge of the domesticated animals, their ways of living, their use by man, their histories, the selection and care of the best breeds, the regions where different ones thrive best; knowledge of house-pets; of wild animals, their relation to one another and to man; of helpful and injurious insects; knowledge of domesticated plants, house plants, vegetable and flowering plants and the gardens in which they grow, agricultural plants, orchard plants, nut and fruit trees of the woods, lumber and its sources and uses, poisonous, medicinal and fibre plants; plants and animals and climatic conditions as soil makers and their consequent relation to agriculture; building stone, brick, lime, sand; minerals, coal, gas, oil; knowledge of simple machines, of applications of electricity; of the transformations of chemistry and their uses in household and industrial processes; knowledge of great units of the earth's surface and the various natural phenomena associated therewith; these and many other things suggest the vast array of useful and interesting nature knowledge.

The third general aim to be recognized, therefore, is to direct observation toward those phenomena which, while best stimulating and extending inquiry and best

serving to develop the proper thought processes, will give enjoyment and useful and interesting knowledge about nature.

Selection and Arrangement of Materials.—The selection and arrangement of the objective phenomena of nature is to be guided in accordance with the aims as stated under II. It follows that those things that are used must contain features of interest that appeal to the learner as in some way worth while. It is not necessary that the ultimate aim of the teacher—for example, to develop a proper attitude of mind—be recognized, but there must be some relatively immediate motive for consideration. This may be a curiosity interest, a desire to know, anticipation of pleasure or thoughts of usefulness. It follows, further, therefore, that the previous nature experiences of the learner must be recognized in beginning this work and things remote in location and thought must not be first considered. The human race doubtless began its nature knowledge by ascertaining what things in nature were useful and what things were helpful to man. The next step was to begin to encourage the production of those plants and animals that were useful to man, and to remove those that were injurious, and thus domestication and cultivation began. Associated with domestication and cultivation it is probable that ideas of stability of home developed, and consequently utensils and implements for the house and field, and devices for preserving and protecting plants and animals through winter. These topics that are so closely related to the earliest definite nature experiences of the race and have continued to be a large factor in such experiences, may properly be among the things first studied in any nature-study work, though it is by no means necessary or always advisable to make material of such economic or industrial relations the point of departure. The point of departure should be found within the environmental experiences of the learners. Nature-study, nor any other subject, can be fully significant unless it is in some way the outgrowth of immediate industrial, social, or intellectual experiences. The remote in nature-study as in any other subject takes on interest and significance only as it may be pictured in terms of experiences with the less remote. Likewise more intricate problems come after the presentation of the more concrete. The topics previously suggested, and any others to be used, should be presented with reference to gradations in difficulty of understanding and relation to previous experiences of the learners. True enjoyment and profit from the study of nature may arise as Thoreau suggests when he says, 'There is no hope for you unless the bit of sod under your feet is the sweetest in this world—in any world.' With younger pupils and with older persons who have always been observant of nature, Thoreau's sentiment holds good, but there are many intelligent people to whom the natural

phenomena of their home is too common to be interesting, whose nature interest is never fully aroused until on some summer vacation trip or some special excursion into a new and remote region they suddenly, in the spirit of wild life, catch the true enthusiasm of the nature student, and thereafter find that which was common has become meaningful. Logically, however, it is interest in and knowledge of that which immediately surrounds us from which we get the basis for proper interest in and valuable knowledge of the remote.

Perhaps the most important single factor of recent introduction that is influential in bringing into proper position this study of nature is the school garden. In many places it has come to serve as the center about which are arranged many nature interests. In addition to the nature work actually done in the school garden, it serves also as a means of organizing much of the in-door nature-study, most of the excursions, and the nature-study literature that is used. A more complete discussion of this question appears under the topic SCHOOL GARDEN.

Nature Pictures and Literature.—First hand study of nature is essential as a precedent to any other form of it. School-room studies, local field studies, and frequent excursions for the observation of natural and industrial phenomena and processes stand first in order. But there are so many interests related to these, yet geographically so remote to the environment of a given group of persons, that they can be presented only by reports from the few who have visited these things, by pictures or by word descriptions. The interest and value of good nature pictures is universally recognized in the school-room and home, and each would be bettered by having more of them. The same sort of appreciation for good nature literature is not so common, due to the fact that so much of it has been written either by those who have been unfamiliar with the phenomena concerning which they have written, or by those who have had the special scientist's knowledge of the phenomena, but no knowledge of the need of the general reader. For anything like general use nature literature should: (1) deal with topics of general interest; (2) it should deal with what is true concerning these topics; (3) it should present its material in attractive, vital and fairly universal forms of expression, omitting the terminology and severe logic of the scientific specialist; (4) it should present a topic or region in its entirety, turning upon it the light of all branches of science knowledge.

The nature-study movement has been greatly cheapened and brought into much merited abuse through the false and foolish use of imagination, personification, and exaggeration. Persons interested in nature want to know what is true and if possible why it is true. Exaggeration, undue imagination, and personification destroy this spirit of the subject. The truth about nature is so

romantic and so full of striking interest that it would serve the purpose of unwarranted nature writers better than the product of their imaginations, if only they knew this truth.

The would-be friends of nature-study have done its cause more injury than its open enemies. Note the following, taken from the writings of prominent nature-study authors. In a magazine article entitled *A Plea for the Trees* one writer says: 'Have you ever thought how sad a tree must feel when it is transplanted from the forest to the city or town? . . . It little dreams of the hideous deforming and 'trimming' that will begin as soon as it commences to spread its tiny branches. Poor little tree! I wonder it does not die of grief and pain! Doubtless, it sighs and sobs out its longing for the old free home in the ears of the passing wind, though we are too dull to understand its murmuring voice. If the wind is in good humor, he caresses it gently, and tries to comfort it; but sometimes he is angry, and then he shakes the poor tree fiercely. But it loves him always, whether he is gentle or rough.' Another says: 'The acropia moth always lays its eggs two by two on a leaf, one always producing a male, the other a female caterpillar, so that, owing to this marvelous dispensation of Divine Wisdom, each has its mate close at hand.' And another: 'And so the witch-hazel, knowing that neither boy nor girl, nor bird nor beast nor wind, will come to the rescue of its little ones, is obliged to take matters into its own hands, and this is what it does,' and following this is a description of how the seeds of the witch-hazel are distributed.

Of course, the above quotations, and hundreds of others of similar nature that might be quoted, do not represent the facts. What, then, is their writers' excuse for presenting them? The misrepresentations of facts are due to a combination of three causes: (1) a desire to write something about nature for children, (2) ignorance of nature, her creatures and their ways, and (3) a low degree of respect for accuracy and truthfulness. These things make it possible for one to imagine that what 'it would be nice to have so in nature' is really true, and therefore may be described as true with all the adornments of an unfounded imagination. Some have believed that imagination is more important than truth, and in absence of knowledge or respect for truth, have turned imagination loose to make the most violent distortions. A true nature imagination projects images into the limits of possibilities and tests these images as opportunities offer themselves. A wide gulf is fixed between this sort of imagination and those vagaries which are the mere play of fancy, and so far as nature is concerned are born of the fullness of ignorance. Nature-study literature by no means denies existence to imagination, in fact, is a great stimulant to it, but it does need to keep clearly defined the limits of the true and false. In its

literature nature-study has suffered greatly at the hands of its would-be friends.

Humanization is often introduced in response to a feeling that children cannot understand plants and animals unless they are made as much as possible like human beings. This resolves itself into using plants and animals as a means of discussion of human beings, consequently cannot be considered a study of plants and animals. If personification stay within the limits of what is possible to the plant or animal discussed, no serious objection is offered. But it is thoroughly false teaching to speak of plants and animals in terms inapplicable to them, or to ascribe motives and ambitions that so far as we know are applicable only to men.

The idea often expressed that this form of presentation is more interesting, even if that were to settle the question, is not true. Children, as older people, want to know what is true, and are far more attracted and benefitted by the wonderfully fascinating processes of nature than in make-believe stories that are devoid of foundation in fact. In nature, as elsewhere, truth is still stranger than fiction, and immeasurably more fascinating just because it is true. John G. Whittier well said: 'The wonderland of childhood must henceforth be sought within the domains of truth. The strange facts of natural history, and the sweet mysteries of flowers and forests, and hills and waters, will profitably take the place of the fairy lore of the past.'

Furthermore, a nature topic to be fully presented from a true nature point of view needs not so much the work of a specialist as it does the work of a man who can turn to account in his description a knowledge of all the sciences involved. The general reader is not interested so largely in the botany or geology of a region as he is in the region as a unit, its composition, its origin, its life of all kinds, why the life forms are here, how they came to be here, and what they are doing. A composite picture of a region in all its problems is the thing of primary interest to the pupil and general nature student. Only that literature is fitted for use in nature study which is as true as our knowledge permits, it being realized by all that our notions of truth are constantly changing. Only that is fitted for use which is written chiefly in the language of the life of the reader and which carries in its form the spirit of truth, vigor, justice and beauty of nature.

NAUGATUCK, *naw'ga-tŭk:* town in New Haven co., Conn.; on the Naugatuck river and the Naugatuck division of the New York, New Haven & Hartford railroad; 5 m. s. of Waterbury, about 22 m. by railroad n.w. of New Haven. In 1844 it was incorporated as a town, and as a borough in 1893. The chief manufactures are rubber goods, paper boxes, knit goods, machine-shop products, and cigars. It has considerable trade in farm prod-

ucts, especially tobacco. It is well supplied with schools; it has besides the public and parish elementary schools, the Whittemore High School, the Salem School, Sacred Heart Academy (Roman Catholic), and the Whittemore Memorial Library. The government is vested in a board of wardens and burgesses, who hold office one year, and who appoint all the administrative officials except the board of education, the members of which are chosen by popular vote. Pop. (1910) 12,722.

NAUGATUCK: a river in Connecticut, has its rise in the northern part of Litchfield co., and flows s., about 60 m., and enters Housatonic river at Derby. It flows through a mountainous part of the state, and supplies water power to many mills and factories. Waterbury (q.v.) is the chief city on its banks.

NAUGHT, or NOUGHT, a. *nawt* [AS. *na-wiht*, no-whit, naught—from *ná*, no, not; *wiht*, a whit, a thing]: bad; worthless: N. nothing. NAUGHTY, a. *nawt'ĭ*, bad; good for nothing; mischievous or perverse; applied to children in censure. NAUGHT'ILY, ad. *-ĭ-lĭ*. NAUGHT'INESS, n. *-ĭ-nĕs*, the quality of being naughty; slight misbehavior; badness. TO SET AT NAUGHT, to disregard; to treat as of no account; to despise.

NAUHEIM, *now'hīm:* town of Hesse-Darmstadt, Germany, 17 m. n. of Frankfort, with many saline and mineral springs, which have given occasion to the building of a handsome watering establishment. Salt-works have long existed, and in 1834 baths were opened. The mineral springs are much resorted to for drinking and for bathing for diseases of the bowels and cutaneous affections, in which their remedial efficacy is notable. Other mineral springs are near, and the waters are sent to all parts of Germany. A shock of earthquake 1846 opened a spring which yields about 75,000 quintals of salt per year, besides a supply of water for bathing. Pop. of Nauheim about 2,500.

NAUHEIM TREATMENT: a method of treatment of certain forms of heart disease which was originated at Bad Nauheim in Germany. It is also called the Schott treatment, after the two brothers Schott, physicians practicing at Nauheim, through whose writings it became known to the medical profession. It consists essentially in a course of baths in water through which carbolic acid gas is bubbling, followed by carefully regulated exercises designed to strengthen the heart.

NAUMACHY, n. *naw'mă-kĭ* [Gr. *naumachĭă*, a sea-fight—from *naus*, a ship; *machē*, a fight]: in *anc. Rome*, a show or spectacle imitating a naval battle. Julius Cæsar was the first to introduce a naumachy into Rome, B.C. 46, causing a portion of the Campus Martius to be dug to form a lake, on which the 'spectacle' came off. Augustus made an artificial lake (*stagnum*) near the Tiber for the same purpose, which was afterward fre-

quently used for such spectacles. Claudius also exhibited a splendid naumachy on Lake Fucinus. Nero, Domitian, and others were fond of the same amusement. The combatants were termed *Naumachariі;* they were mostly either captives or condemned criminals; and the rival fleets took their names from the famous maritime nations of antiquity: Tyrians and Egyptians, Rhodians and Sicilians, Persians and Athenians, Corcyræans and Corinthians, Athenians and Syracusans. The magnificence of these spectacles may be estimated from the fact that, in the one exhibited on Lake Fucinus, 19,000 men were engaged. These were not *sham-fights*, any more than were ordinary gladiatorial combats. Both sides fought on for dear life until one was utterly overpowered; and as a rule, multitudes were 'butchered to make a Roman holiday.'

NAUMANITE, n. *naw'măn-īt* [after Dr. *Naumann* of Saxony]: a peculiar ore of silver, found in cubical crystals, in thin plates, and granular.

NAUMBURG, *nowm'bûrċh:* town of Prussian Saxony, in the government of Merseburg, 17 m. s.s.w. of the town of Merseburg, on the Saale, in the midst of a striking amphitheatre of vine-clad hills. Besides its cathedral—a noble Gothic structure, completed 1249, with two choirs, and containing many beautiful sculptures—there are several other churches. The manufactures are cotton and woolen fabrics, leather, and chemical products. Wine is grown in the vicinity in considerable quantity—11,000 gallons yearly. During the Thirty Years' war, and in the campaigns of 1806 and 1813, Naumburg, in which the Prussian magazines were lodged, was a place of great importance. Five annual fairs are held here. Pop. 23,817.

NAUPAC'TUS. See LEPANTO.

NAUPLIA, *naw'plĭ-a:* small fortified town and seaport in the Morea, Greece, at the northern extremity of the Gulf of Argos or Nauplia, 7 m. s.e. of the town of Argos. It is laid out in the manner of a European town. Its roadstead is one of the best in Greece. In the Church of St. Spiridion, Capo d'Istria was assassinated 1831. Nauplia is of high antiquity. At an early period it was the port and arsenal of Argos. In the 13th c., it was occupied by the Venetians, and was taken by the Turks 1540. It was capital of Greece 1824-35, and had pop. of more than 12,000; but on the removal of the court to Athens, it fell into decay.

NAUSCOPY, n. *naw'skŏp-ĭ* [Gr. *naus*, a ship; *skopĕō*, I view]: the pretended art of discovering approaching ships, or the existence of land, at a considerable distance.

NAUSEA, n. *naw'shĭ-ă* [L. *nausĕă;* Gr. *nausĭă*, seasickness—from Gr. *naus*, a ship: It. *nausea:* F. *nausée*]: a strong sensation of sickness inclining to vomit; loathing; disgust. Nausea is a distressing sensation always re-

ferred to the stomach: unattended by pain, but usually accompanied by a feeling of general languor or debility, a small and often irregular pulse, a pale, cool, and moist skin, general muscular relaxation, increased flow of saliva, and a sensation that vomiting will supervene. It is usually a *direct* symptom of disease or disorder of the stomach, but sometimes it is a very important *indirect* symptom of disease of some part at a distance from the stomach—as, for example, the brain or the kidney. The nausea troublesome to pregnant women is due to the irritation excited by the enlarged uterus and referred by reflex nervous action to the stomach. NAUSEATE, v. *naw'shĭ-āt* [L. *nausĕātus*, made sick]: to affect with disgust; to loathe; to turn away from with disgust; to feel disgust. NAU'SEATING, imp. NAU'SEATED, pp. NAUSEOUS, a. *naw'shĭ-ŭs* or *-shŭs* [L. *nausĕōsus*]: loathsome; disgusting; regarded with abhorrence. NAU'SEOUSLY, ad. *-lĭ*. NAU'SEOUSNESS, n. *-nĕs*, the quality of being nauseous.

NAU'TÆ, CAUPO'NES, ETC. [L. mariners, innkeepers, etc.]: words forming the commencement of an edict in Roman law, which made shipmasters, innkeepers, and stablers liable for the safety of the goods brought in to the ship, inn, or stable. See CARRIERS; INN, in Law.

NAUTICAL, a. *naw'tĭ-kăl*, or NAUTIC, a. *naw'tĭk* [L. *nautĭcus;* Gr. *nautĭkos*, of or belonging to ships or sailors —from Gr. *naus*, a ship]: of or relating to ships or seamen; naval. NAU'TICALLY, ad. *-lĭ*. NAUTICAL ASTRONOMY, astronomy in its application to navigation. NAUTICAL SURVEYING (see HYDROGRAPHY).

NAU'TICAL ALMANAC: official publication by the maritime governments for the use of astronomers and navigators: see ALMANAC. It is valuable to navigators, for its tables of the 'lunar distances'—i.e., distances of the moon from a few (5 to 7) of the more prominent stars, given for every three hours throughout the year—by which, at the present day, longitudes (see LATITUDE AND LONGITUDE) are most conveniently and accurately determined. To the astronomer, the *Nautical Almanac* furnishes a great mass of important data; it gives the position of the moon in right ascension and declination for every hour, and the sun's latitude and longitude for every day in the year; it shows the obliquity of the ecliptic, the sun's and moon's parallax, aberration, etc., at different times; it supplies the necessary data for determination of the real or apparent size, position, and motion of the planets and their satellites; it fixes accurately the places of about 150 fixed stars, and gives full details concerning eclipses, occultations, transits, and other celestial phenomena during the year.

NAUTILOID, n. *naw'tĭ-loyd* [Gr. *nautĭlos*, a nautilus; *eidos*, likeness]: a term applied to the fossil nautili that have many-chambered shells: ADJ. resembling the shell of the nautilus in shape.

NAUTILUS, n. *naw'tĭ-lŭs*, NAU'TILI, n. plu. *-lī'lī* [L. *nautĭlus;* Gr. *nautĭlos*, a shell-fish that was supposed to sail through the waves in its shell—from Gr. *naus*, a ship: It. *nautilo*: F. *nautile*]: popular name for a shell-fish having a boat-like shell in which it was supposed to sail on the surface of the sea. NAUTILIDÆ, n. plu. *naw'tĭ-lī'dē*, a family of mollusks of which the *nautilus* has been taken as the type. NAUTILITE, n. *naw'tĭ-līt*, a fossil nautilus. NAUTILITES, n. plu. *naw'tĭ-līts*, in *geol.* a general term for shells like the existing nautilus.—The Nautilus is a genus of *tetrabranchiate Cephalopoda* (q.v.), extremely interesting as the existing representatives of an order of mollusks now reduced to a very few species, but whose great abundance in former geological periods is attested by the fossil remains. The species of this genus are found only in the seas of warm climates. One or more of them must have been known to Aristotle, as appears from his description, which, however, is not minute. Yet it is but recently that they came under the observation of modern naturalists; and they were very imperfectly known, till a specimen, obtained by Dr. Bennett in a bay of the New Hebrides 1829, was submitted to the examination of Prof. Owen, and became the subject of a valuable memoir by him. The shell, indeed, has long been common in collections, being plentiful, entire or in fragments, on many tropical shores; but from the shell alone, little could be learned concerning the animal to which it belonged. The shell is spiral, the spire not at all elevated; and thus, in external form, resembles the shells of many species of snail; but internally, it is *camerated*, or divided into chambers, by transverse curved partitions of shelly matter. In a very young state, this structure does not exist; but as the animal increases in size, it deserts its first habitation, which then becomes an empty chamber, and so proceeds from one to another still larger, occupying the outermost only, but retaining a connection with all by means of a membranous tube (*siphuncle*) which passes through the centre of each partition. The use of this connection is not known; but the most probable supposition is, that the animal is enabled, by throwing air or some kind of gas into the empty chambers of the shell, or by exhausting them of air, to change the total weight, so that it may rise or sink at pleasure in the water. It commonly inhabits the bottom of the sea, where it creeps about, probably like the gasteropods, by means of a large muscular disk with which the head is furnished; but it sometimes rises to the surface, and is seen floating there. Dr. Bennett states that the specimen which he fortunately captured, attracted his attention when thus floating, as an object resembling a dead tortoise-shell cat. The story of its spreading a sail is as fabulous as the similar story regarding the argonaut. The head and arms can be protruded from the shell, and can also be completely retracted within it. There are numerous arms attached to the head, 19 in the best known species; there are also

numerous other tentacles; but none of these organs are furnished with suckers, and they are feeble in comparison with the corresponding organs of many of the higher or dibranchiate cephalopods. The mouth is of the parrot's bill form, as in the other cephalopods; but the mandibles are not composed entirely of horny matter, their extremities being calcareous and of a hardness apparently adapted for breaking shells. Their edges are also notched, and show an adaptation for crushing rather than for cutting. The tongue is large. The gizzard is muscular. The food appears to consist, at least in great part, of crustaceans. Only three species of N. are known, of which the best known and apparently the most abundant, is the PEARLY N. (*N. pompilius*), in the Indian and the Pacific oceans. Its shell is beautifully nacreous within; and is externally porcelain-like, white, and streaked with reddish chestnut. The shell, being large, thick, and strong, is used for a variety of purposes by the natives of the E. Indies and South Sea Islands; it is also made into ornaments of various kinds in China and elsewhere. The animal is much esteemed as food by the Fijians and other South Sea islanders. The Fijians capture it by means of a basket-trap, somewhat like those used for catching lobsters, baited with boiled cray-fish. The name PAPER N. has sometimes been given to the Argonaut (q.v.).

Fossil Nautilus.—About 150 species of fossil shells have been referred to this genus. They occur in all the strata from the Upper Silurian to the most recent deposits. Numerous forms, however, which exhibit very wide differences, have been incongruously associated under this generic name. The paleozoic nautili are so remarkable, that they must certainly by referred to one or more separate genera: some of the carboniferous species have a square back, and the whorls either compact or open in the centre, while the last chamber is more or less disunited from the shell; and the Devonian Clymenia has angular sutures and an internal siphuncle. Until a careful revision of this section of the Cephalopoda is made, it will be better to consider the species as belonging to the family *Nautilidæ*, and not to the genus *Nautilus*.

NAUTILUS PROPELLER: long the best known among many names given to a mode of propelling steam-vessels by means of a horizontal wheel within board, instead of a paddle or a screw on the outside, and by forcible expulsion of streams of water from within the vessel against the resistance of the water outside. *Hydraulic* propeller has latterly come more into use. Engineers thought of this mode of propulsion generations ago, and patents have been taken out for inventions relating to it; but the most successful attempts to realize it have been those of Ruthven, who constructed a small boat, 9 ft. long, 1839 (tried on a canal), and a vessel, 40 ft. long, 1844 (tried on the Forth), to test the principle; each was worked by a small steam-engine, and provided with the hydraulic apparatus. In 1849, he improved the apparatus, trying it in a vessel

30 ft. long, on the Thames; 1851, he placed a boat in the great exhibition. In 1853, a vessel on this principle, the *Albert*, was built in Prussia, the machinery supplied by Ruthven. Vessels of this kind now rank among the 'inefficients' of the British navy, having been pronounced useless for purposes of warfare.

NAUVOO, *naw-vô:* city in Illinois, on the e. bank of the Mississippi river, 220 m. above St. Louis. It was built by the Mormons 1840, and 1846 had pop. 15,000. Its principal feature was a great temple of polished marble, original in style, and imposing in appearance. After the murder of Joseph Smith, the Mormon prophet (see MORMONS), and the expulsion of his followers, the temple was burned. The city was afterward bought and occupied by a French Socialist community, under the leadership of M. Cabet. This experiment having failed like others, the once famous city has been reduced to an inconsiderable community. Pop. 2,000.

NAVAJOS, *nâ-vâ'ċhōs:* most northerly band of the great Shoshone and Apache family of Indians, occupying a reservation, in n.w. New Mexico and n.e. Arizona, of 6,120 sq. m. They are the most civilized of their stock, from long contact with the half-civilized Pueblo Indians of New Mexico, and from having early obtained horses, cattle, sheep, and goats, and learned to spin and weave cotton and wool. They numbered (1884) 17,200, and had 35,000 horses and 1,000,000 sheep and goats. They till much of their land, in rude fashion, and have a special manufacture of Navajo blankets, whose durability, warmth, and fine quality make them worth $50 to $100. Their houses are the unimproved conical structures of poles covered with boughs. Their long custom of war against the Mexicans, who were never able to reduce them, and several failures of U. S. expeditions against them (Doniphan's 1846, Wilkes's 1847, Newby's 1849, Washington's 1849, and Sumner's 1851) after pushing into the heart of their country, had made them difficult to deal with, until Col. Carson, 1863, by a winter campaign, drove them off to Bosque Redondo, on the Pecos river, where 7,000 of them were kept prisoners for several years at great expense. In 1868–9, Gen. Sherman and Col. Tappan effected a treaty under which they were returned to their old country with a reservation of 3,916,800 acres, where they are now peaceful and industrious.

NAVAL: see under NAVY.—SYN.: marine; maritime nautical. NAVAL ARCHITECTURE: see SHIP-BUILDING. NAVAL SIGNALS: see SIGNALS. NAVAL TACTICS: see TACTICS, NAVAL: NAVAL BATTLE: see ENGAGEMENT.

NAVAL ACADEMY, UNITED STATES: see UNITED STATES NAVAL ACADEMY.

NA'VAL CADET': youth training for service as naval officer (see CADET). Naval Cadets are nominated to the U. S. Naval Acad. at Annapolis, by the pres. and by members of congress; and these nominees, on passing examination, are admitted.

NAVAL INSTITUTE, United States: an organization founded in 1873 at Annapolis, Md., by the officers of the Naval Academy. It issues quarterly *Proceedings* on naval affairs. Each year the institute offers a life membership, a gold medal, and a prize of $100 for the best essay or paper of interest to the naval service.

NAVAL RESERVE, Royal: a sort of militia auxiliary to the British navy; considered an extremely valuable reserve of trained men, ready to man the fleet in case of emergency. The force was instituted 1859, under an act authorizing the engagement of 30,000 men, each for five years, and providing that each shall be trained, 28 days in every year, to the use of arms and naval tactics, either in his majesty's ships or on shore. The men are drilled under the officers of the coast-guard, near their own homes, and at seasons most convenient for them. In national emergency, these men can, by royal proclamation, be called out for service in the navy in any part of the world, for periods not exceeding five years. While training and while called out for actual service, the men receive the same wages as corresponding ratings in the royal navy: in addition, they each receive, as retaining fee, a sum of six pounds for every year in which the regulation training has been completed. While training or on duty, the men are liable to all the punishments, as they are entitled to all the rights and privileges, of regular seamen. In 1861, the system of the reserve was extended to officers of the merchant-service, certificated masters and mates being respectively granted commissions in the naval reserve.

NAVAL RESERVE, United States: a part of the national guard; organized and controlled similarly to the national guard of each state, having drills at stated times and annual rendezvous. Its aggregate strength was (1907) 5,729, including petty officers and men, distributed in such states as have a navigable water-front. Its duty in time of war will be to man the coast and harbor defense vessels, thus leaving free the regular force to carry on offensive operations at sea; it will also operate in boat-squadrons with torpedoes against any hostile fleet in our waters. All matters relating to the naval reserve come under the jurisdiction of the assistant secretary of the navy, and the navy department transacts all its business with the naval reserve through the governors of the states and the adjutants-general. In 1893 congress appropriated $25,000 for the purchase of arms for this service, to be expended under the direction of the secretary of the navy. Besides annual appropriations by the government, the navy department has made donations to the various naval stations. Congress, at the close of the World's Columbian Exposition, gave the boats and other equipments exhibited on board the model battle-ship to the state of Illinois, for the use of its naval auxiliary. The naval reserve is called also *naval militia*.

NAVAN, *nâv'an:* market town in Meath county, Ireland, at the junction of the Boyne and Blackwater, 28 m. n.w. of Dublin by rail. The town consists of three main streets, has a handsome Prot. church and a large Rom. Cath. church; a Rom. Cath. diocesan seminary, a barrack, court-house, infirmary, fever hospital, and workhouse. N. has also a large power-loom factory. Pop. (1891) 3,963, almost all Rom. Catholics.

NAVANAGAR′: see NOWANUGGUR.

NAVARINO, *nâ-vâ-rē′nō* or NEO-CASTRO, *nā-ō-kâs′trō:* seaport and citadel on the s.w. coast of the Morea in Greece; pop. only 2,000. It has importance from its position, commanding the entrance of the Bay of Navarino, at whose s. extremity it is situated. On the island of Sphagia or Sphacteria, which closes the bay's mouth, formerly stood Pylus Messeniaca, the town of Nestor, where now stands Old Navarino or Palæocastron. The Bay of Navarino was the scene of a great sea-fight between the Athenians under Cleon, and the Spartans, (B.C. 425), in which the latter were defeated; and 1827, Oct. 20, it saw the annihilation of the Turkish and Egyptian navies by the combined British, French, and Russian fleets under Sir Edward Codrington.

NAVARRE, *na-vâr′*, or NAVARRA, *nâ-vâ′râ:* province, formerly a kingdom of Spain: bounded n. by France, s. and e. by Aragon, w. by the Biscays; 42° 20′—43° 15′ n. lat., and 0° 50′—2° 30′ w. long.; greatest length n. to s. abt. 90 m., greatest breadth e. to w. 86 m.; about 4,000 sq. m. Pop. (1900) 307,669. The country is mountainous, being bounded and traversed by the Pyrenees, spurs of which occupy almost all the n. and e. of the province. The highest peaks are Altovisear (5,380 ft.), Adi (5,220 ft.), Alcorrunz, and Ruña. N. is watered by the Bidassoa, the Anezo, and by the Ebro, together with its tributaries, the Ega and Aragon, on the level shores of which corn, wine, and oil of good quality are produced. Some of the valleys which intersect the mountain-ranges, as those of Roncesvalles, Lescon, Bastan, and Roncal, have a fruitful soil, and yield good crops; but in the mountain districts, husbandry is impracticable, and the inhabitants nearly all follow the chase, as much from necessity as inclination; and while a large number of the Navarrese are soldiers, a still larger proportion are smugglers—the proximity of the province to France, and the dangerous character of the almost inaccessible mountain passes which are the only connection between the two countries, holding out many inducements and facilities in the way of smuggling. The mountain forests still harbor bears, wolves, wild-cats, goats, deer, and an abundance of game of every other kind. Iron and salt are the chief mineral products of the district, but these are obtained in sufficient quantities to be exported. The people of N. are a hardy, brave, and hospitable race, loyal to the sovereign, attentive observers of the forms of their religion, and, except in the matter of smuggling, honest and moral; but they are passionate and distrustful.

prone to anger, and keen in avenging an insult, real or imaginary. Although not industrious, the people follow a few branches of industry, and manufacture glass, leather, soap, chocolate, etc., of good quality.

The Navarrese, with few exceptions, are members of the Church of Rome, to whose tenets they cling with superstitious devotion. They have always intermarried chiefly among their own compatriots, and are a nearly pure Basque race. In the mountainous districts, Basque is still spoken, but in the plains, the modern Castilian form of Spanish is rapidly supplanting the ancient language. The cap. and chief town is Pamplona (q.v.).

The territory known from an early period of Spanish history under the name N., was occupied in ancient times by the Vascones, who were subdued by the Goths in the 5th c. After having become gradually amalgamated with their conquerors, the people continued in a sort of turbulent independence under military leaders until the 8th c., when they were almost annihilated by the hordes of Arabs who were rapidly spreading their dominion to all parts of the peninsula. The Gothic Vascones of N., who had been converted to Christianity, offered gallant resistance to their Moslem invaders, and though repeatedly beaten, were not wholly subdued. The remnant which escaped the sword of the Moslem enemies took refuge in the fastnesses of the mountains, and choosing a knight of their number, Garcia Ximenes, as their leader or king, they sallied forth, and by their gallant resistance, compelled the Arabs to leave them in the enjoyment of an independence greater than that of the neighboring states. On the extinction of the race of Ximenes, in the middle of the 9th c., the Navarrese elected as their king Inigo Sanchez, Count of Bigorre, in whose family the succession remained till the marriage of Philip the Fair with Queen Joanna I. of N.; and the accession of the former to the throne of France, 1285, rendered N. an appanage of the crown of France. It continued a part of that kingdom during the successive reigns of Louis X., Philip V., and Charles the Fair; but on the death of the last, 1328, France fell to the family of Valois; and the daughter of Louis X., the rightful heir, succeeded to N. as Joanna II. The events of the kingdom present no features of interest during the next hundred years. The marriage of Blanche, daughter of Charles III. of N., with John II. of Aragon, 1442, did not produce an annexation of N. to Aragon, as John allowed his wife to rule her own kingdom as she pleased, and even after her death and his subsequent re-marriage, he resigned the govt. entirely to his son by Blanche. This son, known as Charles, Prince of Viano, having attempted to remained neutral in his father's quarrels with Castile, John expelled him and his elder sister Blanche, who sided with him, from N., and conferred the kingdom on Leonora Countess de Foix, his younger daughter, by Blanche, whose misrule completed the disorganization which these family quarrels had com-

menced. Her son, Francis, called Phœbus, from his beauty, succeeded 1479, and his sister Catherine 1483. Ferdinand and Isabella sought to marry the young queen to their son and heir, the Prince of Asturias, but her mother, a French princess, married her to Jean d'Albret. Ferdinand, however, was not willing to let the prize escape him, and on some slight pretext he seized N. 1512. After this act of spoliation, there remained nothing of ancient N. beyond a small territory on the n. side of the Pyrenees, subsequently united to the crown of France by Henri IV. of Bourbon, King of N., whose mother, Jeanne d'Albret, was granddaughter of Queen Catharine; hence the history of N. ends with his accession to the French throne 1589. In the Carlist struggles, 1834–39 and 1872–76, N. was a chief scene of war.

NAVARRO, *nă-vâr'rō,* MARY ANTOINETTE (ANDERSON): actress: 1859, July 28— ————; b. Sacramento, Cal., where she received education at the Ursuline convent. She studied for the stage at the age of 14; made her first appearance in Louisville, Ky., 1875, as Juliet, in *Romeo and Juliet;* first appeared in New York 1876; visited Europe 1879, and successfully played the character of Galatea on her return. In 1883 she made her *début* in London. In 1890 she married, in England, A. F. de Navarro, and retired from the stage. *A Few Memories*, her reminiscences, was published 1896.

NAVE, n. *nāv* [Dut. *naaf;* Icel. *nöf*, the nave: Ger. *nabe* or *nabel;* Low Ger. *nave* or *navel*, the nave of a wheel: Ger. *nabel;* Dut. *navel;* Icel. *nabli;* Skr. *nabhi*, the navel; Fin. *napa*, navel, centre]: the centre part of a wheel in which the spokes are inserted, and through which the axle passes. NAVEL, n. *nā'vĕl* [dim. of Eng. *nave*]: the mark in the centre of the lower part of the abdomen, indicating the place of detachment of the umbilical cord after birth; the central part or point of anything. NAVEL-STRING, the umbilical cord.

NAVE, n. *nāv* [mid. L. *nāvis;* F. *nef*, the part of the church in which the laity were placed—from L. *nāvis*, a ship—so called from its vaulted or curved roof resembling the inverted hull of a ship]: the middle part or body of a church extending from the choir to the principal entrance; the part of a church between the wings or aisles: see CHURCH.

NAVEL: see under NAVE 1.

NAVESINK (often called NEVERSINK) HIGHLANDS: popular summer resort and important light-house station in Monmouth co., N. J., on the s. side of Sandy Hook Bay, 20 m. s. of New York. They comprise a range of hills, of which Mt. Michael (282 ft.) is the highest; and bear 2 first-class light-houses, 53 ft. high, 100 ft. apart, on ground 195 ft. above the sea, both showing fixed white lights. They afford a beautiful view of ocean and hills, contain 5 hotels and several summer boarding-houses, and are on the line of daily railroad and steam-boat travel from New York.

NAVEW, or NAPHEW, n. *nā′vū* [OF. *naveau*; F. *navet*, a turnip—from L. *napus*, a turnip: AS. *naepe*, a turnip]: garden vegetable much cultivated in France and other parts of the continent of Europe, often growing in cornfields, though little used in Britain. It is by some botanists regarded as a cultivated variety of *Brassica napus* or Rape (q.v.), while others refer it to *B. campestris*, sometimes called Wild N., the species which is supposed to be the original also of the Swedish Turnip (q.v.). The part used is the swollen root, somewhat like a carrot in shape. Its color is white. Its flavor is much stronger than that of the turnip. It thrives best in a dry light soil. The seed is sown in spring, and the plants thinned out to 5 inches apart.

NAVICULA, n. *nă-vĭk′ū-lă* [L. *navĭcŭla*, a little ship—from *nāvis*, a ship]: in *geol.*, a genus of microscopic diatoms—so called from their siliceous boat-like cases. NAVIC′ULAR, a. *-ū-lĕr*, pertaining to or like a boat.

NAVIC′ULAR DISEASE, in the Horse: strain of the strong flexor tendon of the foot, at the point within the hollow of the fetlock, where it passes over the navicular bone. It is most common among the lighter sorts of horses, especially where they have upright pasterns, out-turned toes, and early severe work on hard roads. It soon gives rise to a short tripping yet cautious gait, undue wear of the toe of the shoe, wasting of the muscles of the shoulder, and projecting or 'pointing' of the affected limb while standing. When early noticed, and in horses with well-formed legs, it is often curable; but when of several weeks' standing, it leads to so much inflammation and destruction of the tendon and adjoining parts, that soundness and fitness for fast work are again impossible. Rest should at once be given, the shoe removed, the toe shortened, and the foot placed in a large, soft, hot poultice, changed every few hours. Laxative medicine and bran mashes should be ordered, and a soft bed made with old short litter. After a few days, and when the heat and tenderness abate, cold applications should supersede the hot; and, after another week, a blister may be applied round the coronet, and the animal placed for two months in a good yard or in a grass field, if the ground be soft and moist; or, if sufficiently strong, at slow farm-work on soft land. Division of the nerve going to the foot removes sensation, and consequently lameness; thus it is useful in relieving animals intended for breeding purposes or for slow work. The operation, is not to be recommended where fast work is required; for the animal, insensible to pain, uses the limb as if nothing were amiss, and the disease becomes worse.

NA′VIES, ANCIENT AND MEDIÆVAL: assemblages (anciently) of *beaked* vessels to be driven against other vessels; or (later) of vessels employed to bring combatants into a hand-to-hand struggle. Hence skill and celerity in maneuvering, so as to strike the enemy at the greatest disadvantage, were of utmost importance; and the victory was usually with the best sailor. This mode

of conflict has been in part revived at the present time, and vessels called 'steam-rams' are specially constructed for this species of conflict. The earliest powers having efficient fleets appear to have been the Phœnicians, Carthaginians, Persians, and Greeks; the Greeks had fleets as early as the beginning of B.C. 7th c.—the first sea-fight on record being that between the Corinthians and their colonists of Corcyra, B.C. 664. The earliest great battle in which tactics appear to have distinctly been opposed to superior force, and with success, was that of Salamis B.C. 480, where Themistocles, taking advantage of the narrows, forced the Persian fleet of Xerxes to combat in such a manner, that their line of battle but little exceeded in length the line of the much inferior Athenian fleet. The Peloponnesian war, where 'Greek met Greek,' tended much to develop the art of naval warfare. But the destruction of the Athenian marine power in the Syracusan expedition of B.C. 414, left Carthage mistress of the Mediterranean. The Roman power, however, gradually asserted itself, and after two centuries, became omnipotent by the destruction of Carthage. For several following centuries, the only sea-fights were occasioned by the civil wars of the Romans. Toward the close of the empire, the system of fighting with pointed prows had been discontinued in favor of that which had always co-existed—viz., the running alongside, and boarding by armed men, with whom each vessel was overloaded. Onagers, ballistæ, etc., were ultimately carried in the ships, and used as artillery; but they were little relied on, and it was usual, after a discharge of arrows and javelins, to come to close quarters. A sea-fight was therefore a hand-to-hand struggle on a floating base, in which the vanquished were almost certainly drowned or slain.

The northern invaders of the empire, and subsequently the Moors, seem to have introduced swift-sailing galleys, warring in small squadrons and singly, and ravaging all civilized coasts for plunder and slaves. This—the break-up of the empire—was the era of piracy, when every nation, which had more to win than lose by freebooting, sent out its cruisers. Foremost for daring and seamanship were the Norsemen, who penetrated in every direction from the Bosporus to Newfoundland. Combination being the only security against these marauders, the mediæval navies gradually sprang up; the most conspicuous being—in the Mediterranean, those of Venice, Genoa, Pisa, Aragon; on the Atlantic sea-board, England and France. In the Mediterranean, Venice after a long struggle with the Genoese, and subsequently with the Turks, became the great naval power. The Aragonese fleet gradually developed into the Spanish navy, which, at the epoch of Columbus, had a rival in that of Portugal. Many struggles left, in the 16th and 17th c. the principal naval power in the hands of the English, French, Dutch, Spaniards, and Portuguese. For the present state of these and other existing navies, see NAVIES, MODERN.

NA'VIES, MODERN: national organizations of war-ships, dating from the 16th c. In 1588 we find the British navy rising from insignificance by the destruction of the Spanish Armada: a blow from which Spain never recovered, and which the Dutch, whose naval force had acquired tremendous strength in their struggle for independence, increased the weight of, by their triumph 1607, in the Bay of Gibraltar. At this time, there was no decisive superiority of the fleet of England over that of France; but each was inferior to the Dutch navy. The Commonwealth and the reign of Charles II. were signalized by the struggle for mastery between the English and Dutch; when victory, after many alternations, finally sided with the English. Through the 18th c., the English and French were the principal fleets; but Louis XVI. gave a decided superiority to the navy of France; and at the period of the American revolution, the naval power of England was seriously threatened. Spain, Holland, and Russia (now for the first time a naval power) had meanwhile acquired considerable fleets; and the 'armed neutrality,' to which the northern powers gave their adherence, rendered the British position most critical. However, the slowly roused energy of her government, the invincible courage of her seamen, and the genius of her admirals brought Britain through all her trials. Camperdown broke the Dutch power; many battles weakened the French navy; and at Trafalgar, 1805, it, with the Spanish power, was swept from the ocean. The United States had in the mean time augmented their fleet, and in the war of 1812–14 maintained a glorious struggle. During the American war of secession, many gun-boats, 'monitors,' and iron-clads of all classes were built; but chiefly adapted for river and coast service. Emperor Napoleon III. greatly enlarged and improved the French navy, yet in the war of 1870–1 it had no opportunity of proving its effectiveness.

The contest between the attack and defense which has been going on for some time appears to have attained its limits in the 100-ton guns of the Italian navy and the 24-inch armor-plate of the British; and a new departure seems already to have been taken which points in the direction of steel-plates and speed, and a more special adaptation of ships for particular services. The torpedo system has introduced a new element into naval warfare, particularly in harbors, rivers, and inland waters, which is not yet fully developed (see TORPEDO); and the catastrophes of the *Vanguard* of the British navy, and the *Grosser Kurfürst* of the German, have pointed out dangers connected with the ram system that had not been foreseen.

The strength of the navies of the principal nations of the world (1903) is shown in the following statement: A first-class battle-ship is understood to be not more than 12 years old, and not of less than 6,000 tons displacement; second-class battle-ship not more than 20 years old nor of less than 5,000 tons displacement; third-class not more than 27 years old nor of less than 13 knots nominal speed.

those of less speed being classed as port-defense vessels. First-class cruisers are armored vessels with a speed of about 17 knots; second-class cruisers are of 2,000 tons with not less than 14 knots speed; third-class cruisers include sloops, gunboats, torpedo-cruisers, etc.; first-class torpedo-craft are not less than 115 feet in length; second-class 100·1 to 114·9; third-class 86 to 100.

Austria-Hungary.—The Austro-Hungarian navy is mainly for coast-defense, with a flotilla of monitors for the Danube It consisted (1892) of battle-ships, second-class, 3; third-class, 3; armored-cruisers, first-class, 1; second-class, 5; old battle-ships, 7; cruisers, 6; torpedo gunboats, 4; torpedo-boats (effective), 6.

Brazil.—The Brazilian army consists of torpedo-gunboats, 4; effective torpedo-boats, 8; besides some older ones and several miscellaneous vessels.

China.—Prior to the war with Japan, China had a powerful navy, comprising armor-clads of modern construction and equipment, but, her seamen proving incompetent to manage them, all her chief vessels were sunk, destroyed or captured by the Japanese. The Chinese fleet now consists of battle-ships, 2; swift cruisers, 2; small cruisers, 3; torpedo-gunboat, 1.

Denmark.—The Danish fleet comprises coast-defense armor-clads, 5; cruisers and gun vessels, third-class, 6; gun-boats, 7; and a flotilla of torpedo-boats, first-class, 14; second-class, 20.

France.—The French navy ranks second to that of Great Britain; contains battle-ships, first-class, 1 (building, 6); second-class, 10 (building, 5); armored-cruisers, first-class, 12; second-class, 19; cruisers, 35; torpedo-gunboats, 15; destroyers, 20; torpedo-boats, first-class, 41; second-class 133; submarines, 14.

Germany.—Battle-ships, 46; coast-defence ships, 8; cruisers, second-class, 22; third-class, 48; torpedo-boats, 114.

Great Britain.—Battle-ships, first-class, 27; second-class, 9; third and fourth-class, 9; armored cruisers, second-class, 10; third-class, 4; protected-cruisers, 127; torpedo-gunboats, scouts, etc., 33; destroyers, 113; torpedo-boats (effective), 50; torpedo-ships, 1; submarines, 5.

Greece.—The navy of Greece comprises battle-ships, 3; torpedo-boats, 19.

Italy.—Battle-ships, first-class, 2; second-class, 2; armored-cruisers, first-class, 2; second-class, and old ships, 14; third-class, 3; protected-cruisers, 14; gunboats, 11; destroyers, 7; modern torpedo-boats, 33; submarine torpedo-boat, 1.

Japan.—Battle-ships, first-class, 4; second-class, 2; armored-cruisers, 6; cruisers, first-class, 10; second-class, 4; torpedo-gunboats, 4; destroyers, 20; modern torpedo-boats, 47.

Netherlands.—Iron-clad turret ships, 2; armored-cruisers, 6; protected-cruisers, 4; unprotected-cruisers,

5; old flat-bottomed gun-boats, 30; and a number of coast-defense monitors.

Portugal.—Armored vessel, 1; protected-cruisers, 5; cruisers, third-class, 2; gun-boats, 20; river boats, 16; steamers, 5; destroyer, 1; training ships, 5.

Russia.—There are four distinct fleets or flotillas, each with its own organization. The Baltic fleet comprises, battle-ships, first-class, 2 (building, 5); second-class, 3; third-class, 2; fourth-class 2; armored-cruisers, first-class, 3; second-class 1; cruisers, 17 (building, 4); coast battle-ships, 3; torpedo-gunboats, 3; destroyers, 20; submarines, 2. The Black Sea fleet: Battle-ships, first-class, 1 (building, 1); second-class, 1; third-class, 2; fourth-class, 5; torpedo-gunboats, 4; destroyers, 6. The Siberian and Caspian fleets: battle-ships, first-class, 3 (building, 6, projected, 6); second-class, 4; third-class, 4; fourth-class, 7; armored-cruisers, first-class, 3; second-class, 1; cruisers, 19 (building, 8); torpedo-gunboats, 7; destroyers, 26 (building, 27, projected, 12); submarines, 2 (projected, 50). There were also in the navy 53 effective torpedo-boats, built or building.

Spain.—In the war with the United States complete disaster overtook the Spanish fleet. It comprises cruisers, 5; destroyers, 6; torpedo-gunboats, 7.

Sweden and Norway—Armored coast-defense turret-ships, 7; armored-cruisers, 1; torpedo-gunboats, 5; destroyer, 1; monitors for coast-defense, 11, and several gun-boats and training ships.

Turkey.—A slow reorganization of the Turkish fleet is taking place; many new vessels are being constructed. It has torpedo-gunboats, 6; miscellaneous, 21.

United States.—Battle-ships, first-class, 6 (building, 5, proposed, 2); second-class, 6; fourth-class, 1; monitors, 10 (building, 1); cruisers, 21 (building, 6); gun-boat, 20 (building, 1); torpedo-boat destroyers, 20 (building, 2); torpedo-boats (effective), 22+; submarine torpedo-boats, 8.

NAVIGABLE: see under NAVIGATE.

NAVIGATE, v. *năv'i-gāt* [L. *navĭgātus* sailed upon—from L. *nāvis*, a ship: Gr. *naus;* It. *navigare;* OF. *navig-r;* F. *naviguer*, to navigate]: to sail over or on, as a sea; to steer or manage a ship; to pass by water. NAV'IGATING, imp. NAV'IGATED, pp. NAV'IGATOR, n. *-tĕr*, a sailor; one skilled in navigation; sometimes applied to a laborer employed in constructing a railway, canal, or road: see NAVVY. NAV'IGA'TION, n. *-gā'shŭn* [F.—L.]: the art or science of conducting vessels from one place to another by water: see NAVIGATION, HISTORY OF: MERCHANT SHIPPING ACT: NAVIGATION LAWS: STEAM NAVIGATION. NAVIGABLE, a. *năv'i-gă-bl* [F.—from L. *navĭga'bĭlis*—from *nāvis*, a ship]: that may be sailed on by ships. NAV'IGABLY, ad. *-gă-blĭ*. NAV'IGABLENESS, n. *-bl-nĕs*, or NAV'IGABIL'ITY, n. *-bĭl'i-tĭ*, the quality or condition of being navigable.

NAVIGA'TION, HISTORY OF: divisible into three sections—history of the progressive improvement in the construction of ships, history of the growth of naval powers, and history of the gradual spread and increase of the science of navigation. Although these three sections are to some extent interwoven, the present consideration is limited to the last: for the first two see SHIP-BUILDING: NAVIES.

The first use of ships, as distinguished from boats, appears to have been by the early Egyptians, who are believed to have reached the w. coast of India, besides navigating the Mediterranean. Little, however, is known of their prowess on the waves; and, whatever it may have been, they were soon eclipsed by the citizens of Tyre, who, to make amends for the unproductiveness of their strip of territory, laid the seas under tribute, and made their city the great emporium of Eastern and European trade. They spread their merchant fleets throughout the Mediterranean, navigated King Solomon's squadrons to the Persian Gulf and Indian Ocean, and planted colonies everywhere. Principal among these colonies was Carthage, which soon outshone the parent state in maritime daring. The Carthaginian fleets passed the Pillars of Hercules, and, with no better guide than the stars, are believed to have spread n. to the British Isles, and s. for some distance along the w. coast of Africa. From B.C. 6th c. to B.C. 4th c. the Greek states gradually developed the art of navigation, and at the time of the Peloponnesian war, the Athenians appear to have been skilful tacticians, capable of concerted maneuvers. The Greeks, however, were warlike rather than commercial in their nautical affairs. In B.C. 4th c. Alexander destroyed the Tyrian power, transferring its commerce to Alexandria, which, having an admirable harbor, became the centre of trade for the ancient world, and far surpassed in the magnitude of its marine transactions any city which had yet existed. Rome next wrested from Carthage its naval power, and took its vast trade into

the hands of the Italian sailors. After the battle of Actium, Egypt became a Roman province, and Augustus was master of the enormous commerce both of the Roman and of the Alexandrian merchants. During all this period, the size of the vessels had been continually increasing, but probably the form was that of the galley, still common in the Mediterranean, though a more clumsy craft then than now. Sails were known, and some knowledge was evinced even of beating up against a foul wind; but oars were the great motive-power; speed was not thought of, a voyage from the Levant to Italy being the work of a season; and so little confidence had the sailors in their skill or in the stability of their ships (still steered by two oars projecting from the stern), that it was customary to haul the vessels up on shore when winter set in. During the empire, no great progress seems to have been made, except in size of vessels; but regular fleets were maintained, both in the Mediterranean and on the coast of Gaul, for protection of commerce. Meanwhile the barbarian nations of the north were advancing in quite a different school. The Saxon, Jutish, and Norse prows began to roam the ocean in every direction; in small vessels, they trusted more to the winds than to oars, and, sailing singly, gradually acquired that hardihood and daring which ultimately rendered them masters of the sea. The Britons were no mean seamen, and when Carausius assumed the purple in their island, he was able, for several years, by his fleets alone to maintain his independence against all the power of Rome.

The art of navigation became almost extinct in the Mediterranean with the fall of the empire; but the barbarous conquerors soon perceived its value, and revived its practice, adding new inventions. The islanders of Venice, the Genoese, and the Pisans, were the carriers of that great inland sea. Their merchants traded to the furthest Indies, and their markets became the exchanges for the produce of the world. Vast fleets of merchant galleys from these flourishing republics dared the storm, while their constant rivalries gave occasion for the growth of naval tactics. So rich a commerce tempted piracy, and the Moorish corsairs penetrated everywhere on both sides of the Straits of Gibraltar in quest of prey; evincing not less skill and nautical audacity than savage fury and inhuman cruelty. But the Atlantic powers, taught in stormy seas, were rearing a naval might that should outrival all other pretenders. The Norsemen extended their voyages to Iceland, Greenland, and Newfoundland, while they first ravaged and then colonized the coasts of Britain, France, and Sicily. The sea had no terrors for these hardy rovers; their exploits are imperishably recorded in the Icelandic Sagas, and in the numerous islands and promontories to which they have given names.

Early in the 15th c., the introduction of the mariner's compass rendered the seaman independent of sun and

stars—an incalculable gain, as was soon shown in the ocean-voyages of Columbus, Cabot, and others. In 1492, Columbus rendered navigation more secure by the discovery of the variation of the compass. Between that time and 1514, the 'cross-staff' began to be used; a rude instrument for ascertaining the angle between the moon and a fixed star, with the consequent longitude. Early in the 16th c., tables of declination and ascension became common. In 1537, Nuñez (Nonius), a Portuguese, invented various methods of computing the rhumb-lines and sailing on the great circle. In 1545, the first two treatises on systematic navigation appeared in Spain, one by Pedro de Medina, the other by Martin Cortes. These works were speedily translated into French, Dutch, English, etc., and for many years were the text-books of practical navigation. Toward the end of the century, Bourne in England, and Stevin in Holland, improved the astronomical portion of the art, while the introduction of time-pieces and the Log (q.v.) rendered the computation of distance more easy.

It would be tedious to enumerate the successive improvements by which the science of navigation has been brought to its present perfection; but as conspicuous points in the history of the art, the following stand out: The invention of Mercator's chart, 1569; the formation by Wright of tables of meridional parts, 1597; Davis's quadrant, about 1600; the application of logarithms to nautical calculations, 1620, by Edmund Gunter; the introduction of middle-latitude sailing, 1623; the measure of a degree on the meridian, by Richard Norwood, 1631. Hadley's quadrant, a century later, rendered observations easier and more accurate; while Harrison's chronometers (1764), rendered the computation of longitude a matter of comparatively small difficulty. Wright, Bond, and Norwood were the authors of scientific navigation, and their science is now made available in practice by means of the *Nautical Almanac*, published annually by the British admiralty, and through similar issues by other governments.—For the more important points of the science of navigation, see such titles as DEAD-RECKONING: LATITUDE AND LONGITUDE: GREAT-CIRCLE SAILING: SAILINGS: ETC.

NAVIGATION LAWS: set forth in the U. S. Revised Statutes (sections 4131–4680), and in the General Regulations promulgated by the sec. of the treasury under the laws of the United States.—By the law of nature and of nations, the navigation of the open sea is free to all the world. The open sea means all the main seas and oceans beyond three miles from land. The sea within three miles from land is called the territorial sea, and each state has a kind of property in such sea, and has a right to regulate the use thereof. (See INTERNATIONAL LAW). Hence, it was natural that in early times, before the laws of commerce were properly understood, each state should endeavor to exclude foreigners from that part of the sea so as to secure to its own subjects the benefits of the carriage of goods in ships, always a great source of wealth. In England, however, as in most countries, the first care seems to have been bestowed on the navy, as the great means of defending the realm against enemies, and trading-ships came to be subject to statutory regulation first only as being in some way ancillary to the interests of the navy. The laws of Oleron were the first code of maritime laws which obtained notice as well as general acceptance in Europe, in the time of Edward I., and the authorship of those laws is claimed by Selden and Blackstone for Edward I., though the point is disputed by the French writers. By a statute of Richard II., in order to augment the navy of England, it was ordained that none of the lieges should ship any merchandise out of the realm except in native ships, though the statute was soon varied and seldom followed. At length, 1650, an act was passed with a view to stop the gainful trade of the Dutch. It prohibited all ships of foreign nations from trading with any English plantation without a license from the council of state. In 1651, the prohibition was extended to the mother-country, and no goods were allowed to be imported into England or any of its dependencies in any other than English bottoms, or in the ships of that European nation of which the merchandise was the genuine growth or manufacture. At the Restoration, these enactments were repeated and continued by the Navigation Act (12 Char. II. c. 18), with the addition, that the master and three-fourths of the mariners should be British subjects. The object of this act was to encourage British shipping, and it was long believed wise and salutary. Adam Smith, however, was convinced that the act was not favorable to foreign commerce or to opulence, and it was on the ground only that defense was more important than opulence, that he said it was 'perhaps the wisest of all the commercial regulations of England.' In 1826, the statute 4 Geo. IV. c. 41 repealed the Navigation Act, and established a new system of regulations, which were varied by subsequent statutes, till, under the influence of the free-trade doctrines, new statutes were passed, reversing the ancient policy. By the law, as now altered, foreign vessels are allowed free commercial intercourse and equality with

the ships of Britain and its dependencies, except as regards the coasting-trade of the British possessions in Asia, Africa, and America; for the coasting-trade of the United Kingdom is now entirely thrown open to all comers. The advantages of equality and free trade are, however, so far qualified, that in the case of the ships of those nations which do not concede to British ships like privileges, prohibitions and restrictions may be imposed by order in council. As regards those laws of navigation which affect the property and management of ships, the complete code of regulations for Great Britain is contained in the Merchant Shipping Acts (q.v.).

The U. S. Navigation Laws treat of the following subjects: Title 48, Regulation of Commerce and Navigation; 49, of Vessels in Foreign Commerce; 50, of Vessels in Domestic Commerce; 51, of Fisheries; 52, of Steam Vessels; 53, Merchant Seamen; 54, Prize; 55, Lights and Buoys; 56, The Coast Survey.

These laws (see *U. S. Revised Statutes*, 2d ed. 1878) treat of registry and recording; clearance and entry; tonnage duties; discriminating duties; navigation (to prevent collisions); transportation of passengers and merchandise; log-books; piracy; trials for offenses against provisions to prevent collisions (sec. 4,131–4,305); vessels in foreign commerce (4,306–4,310); vessels in domestic commerce (4,311–4,390); fisheries (4,391–4,398); inspection 4,399–4,462); transportation of passengers and merchandise on steam vessels (4,463–4,500); shipping commissioners (4,501–4,508); shipment (4,509–4,523); wages and effects of seaman (4,524–4,548); discharge (4,549–4,553); protection and relief of seamen (4,554, 4,591); fees of shipping commissioners (4,592–4,595); offenses and punishments (4,596–4,612); regulations concerning prizes (4,613–4,652); lights and buoys (4,653–4,680); and the coast survey (4,681–4,691).

Vessels registered pursuant to law, and no others, except such as shall be duly qualified, according to law, for carrying on the coasting trade and fisheries, or one of them, are defined as vessels of the United States; but they shall possess the guaranteed rights and privileges only while they are wholly owned by citizens and are commanded by a citizen of the United States; officers of vessels of the United States must in all cases be citizens of the United States. Vessels built within the United States, and belonging wholly to citizens thereof, and vessels which may be captured in war by citizens of the United States, and lawfully condemned as prize, or which may be adjudged to be forfeited for a breach of the laws of the United States, being wholly owned by citizens, and no others, may be registered as U. S. vessels. The registered tonnage of every vessel built within the United States or by a citizen or citizens thereof shall be her entire internal cubical capacity in tons of 100 cubic ft. each. The master or person having the charge or command of any vessel bound to a foreign port, shall deliver to the collector of the district

from which such vessel is about to depart, a subscribed and sworn manifest of all the cargo on board the same; whereupon the collector shall grant a clearance for such vessel and her cargo. A departure without such clearance is punishable by a fine of $500 for each offense. Vessels entering the United States from any foreign port or place are obliged to pay duties ranging from 30 cts. to $2 per ton, besides a tax of 30 cts. per ton on all foreign vessels that may be entered at any U. S. custom-house. No tax or duty is levied on vessels belonging to citizens of the United States trading from one port to another within the United States, or employed in the bank, whale, or other fisheries, if licensed, registered, or enrolled. Pleasure yachts, entitled to be enrolled as U. S. vessels, may be licensed to proceed from port to port in the United States, and by sea to foreign ports, without entering and clearing at a custom-house; and yachts belonging to a regularly organized yacht club of any foreign nation which shall extend like privileges to the yachts of the United States, shall have the privilege of entering or leaving any port of the United States without entering or clearing at a custom-house, or paying tonnage-tax.

Every steam-vessel which is under sail, and not under steam, is defined as a sail vessel; and every steam-vessel under steam, whether under sail or not, as a steam-vessel. All ocean-going steamers, and steamers carrying sail, must display lights in all weathers, between sunset and sunrise, when under way; and sail-vessels, under way or being towed, shall carry the same lights as steam-vessels under way, excepting that they must never carry white mast-head lights. Different kinds and locations of lights are provided for various waters, kinds of steam or sail vessels, and employment. Whenever there is a fog or thick weather, whether by day or night, fog-signals must be made by steam vessels with steam whistles and by sailing-vessels with fog-horns, the former once a minute, the latter once every five minutes, when under way; and when not under way both kinds of vessels shall sound a bell at least every five minutes. Two steam or sail vessels meeting end on, or likely to do so, must avoid collision by putting both helms to port, so that each may pass on the port side of the other. When two sail or steam-vessels are crossing so as to involve risk of collision, the sail-vessel with the wind on the port side shall keep out of the way of the sail-vessel, with the wind on the starboard side (where the vessels have the wind on different sides), a free vessel must keep out of the way of a close-hauled vessel, and where both vessels have the wind on the same side, the windward vessel must keep out of the way of the leeward; and of two steam-vessels the one which has the other on her own starboard side must keep out of the way of the other.

Every vessel of the United States going to any foreign country, shall, before departure and at the request of

the commanding officer, be furnished by the collector of the vessel's district with a passport, provided a bond is filed that it shall not be applied to the use or protection of any other vessel; and a departure without such passport is punishable by a fine of $200 for each offense. Vessels of 20 tons and more enrolled and having a license in force, or vessels of less than 20 tons, which, though not enrolled, have such license, and no others, are defined as vessels of the United States entitled to the privileges of vessels employed in the coasting-trade or fisheries.—A seaman's right to wages and provisions begins either at the time he begins work, at the time specified for the beginning of his work, or at his presence on board ship, whichever first happens, and is independent of the earning of freight by the vessel. No wages due or accruing to any seaman shall be subject to attachment or arrestment from any court, and the wages due a seaman dying at sea shall be paid to the U. S. shipping commissioner at the first U. S. port reached, and his clothing and effects may be sold at mast-head auction. U. S. commissioners act as arbitrators between officers, owners, or consignees, and any member of their crews. Prizes are defined as all captures made by authority of the United States, or adopted and ratified by the pres. of the United States; and vessels of the navy, by whom alone prize captures are made, are defined as all armed vessels officered and manned by the United States, and under the control of the dept. of the navy.—Light-houses (q.v.), light-ships, and buoys are under control of a board, comprising two naval officers of high rank, two engineer officers of the army, two civilians of high scientific attainments, and an engineer officer of the army and a naval officer, who act as secretaries. All members of the board are appointed by the pres. of the United States, and are under immediate direction of the sec. of the treasury. See COAST AND GEODETIC SURVEY.

NAVIGA'TORS' ISLANDS, or SAMO'AN ISLANDS: see SAMOA: 'APIA.

NAVVY, n. *năv'vĭ* [the presence of *vv* in the spelling of this word may be accounted for were it derived from *nabbi* or *naabbi*, a word said to be of Danish origin, and signifying *neighbor:* Gael. *nabhaid*, neighbor]: the name applied to the workmen employed in constructing canals or navigations, railroads, etc. *Note.*—In the sense of *neighbor*, the word is said to have been in common use by men from the island of Skye who worked on the early railway and other great works; the word is generally, but perhaps incorrectly, said to be a corruption of *navigator*, a word alleged to have been first applied to the early excavators of canals. In the north of England a canal is called a *navvy*, but this name doubtless arose from the popular name of the workmen employed at such undertakings, and not from a canal as a means of *navigation*.

NAVY, n. *nā'vĭ* [OF. *navie*, a fleet, originally a single ship—from L. *nāvis*, a ship: Gr. *naus*, a ship]: the whole of the ships of war belonging to a country; an assemblage of merchantmen; the whole officers and men serving in the war-ships of a country. NAVAL, a. *nā'văl* [F. *naval*, pertaining to a ship—from L. *navālis*, of or belonging to ships: It. *navale*]: pertaining to a navy; consisting of ships; maritime.—See NAVIES: BRITISH NAVY: UNITED STATES NAVY: UNITED STATES NAVAL ACADEMY: ADMIRAL: CAPTAIN: HALF-PAY: TURRET-SHIPS: ARMOR-PLATES: SHIP-BUILDING: SIGNALS: ETC.

NAWAB, n. *nă-wawb'*: in *India*, a deputy or viceroy; a title often given by courtesy to persons of high rank in the East.

NAY, ad. *nā* [for *ne aye*, being AS. *ne*, not, and Eng. *aye*, ever: Icel. *nei*, no: Goth. *niaiv*, never]: a word that expresses refusal; not; not only so; not this alone: N. a denial; a refusal. NAYWARD, n. *nā'wĕrd* [AS. *weardes*, direction]: in *OE.*, in the direction of a denial; tendency to denial. NAYWORD, n. *nā'wĕrd* [*nay*, and *word*]: in *OE.*, a by-word; a proverbial reproach; a watchword.

NAXOS, *năk'sŏs*: largest, most beautiful, and most fertile of the Cyclades; an island in the Ægean, midway between the coasts of Greece and Asia Minor; extreme length about 20 m.; breadth 15 m. The shores are steep, and the island is traversed by a ridge of mountains, which rise in the highest summit, Dia, above 3,000 ft. The plains and valleys are well watered; the principal products and articles of export are wine, corn, oil, cotton, fruits, and emery. The wine of N. (the best variety of which is still called in the islands of the Ægean, *Bacchus-wine*) was famous in ancient as it is in modern times, and on this account the island was celebrated in the legends of Dionysus, especially in those relating to Ariadne. Among its antiquities are a curious Hellenic tower, and an unfinished colossal figure, 34 ft. long, still lying in an ancient marble quarry in the north of the island, and always called by the natives a figure of Apollo. N. was ravaged by the Persians B.C. 490, and after the conquest of Constantinople by the Latins became the seat of a dukedom, founded by the Venetians. It now forms a portion of the kingdom of Greece (q.v.).—Naxos, the cap. (pop. about 2,000), is on the n.w. coast, contains 16 Greek, and 4 Catholic churches, and 3 convents, and is the seat of a Greek and a Latin bishop. Pop. about 19,000.

NAZARENE, n. *năz'ă-rēn* [from *Nazareth* in Galilee, the birth-place of Christ; (according to Hengstenberg and others) from Heb. *netser*, a shoot or sprout—referring to the luxuriant growth of vegetation near]: inhabitant of Nazareth. The term was applied by the Jews to Jesus Christ, and afterward became a common appellation of the early Christians in Judæa. Although, originally, it is but a local appellation, there can be no doubt that as Nazareth was but a second-rate city of the

despised province of Galilee, it was eventually applied to our Lord and his followers as a name of contempt (John xviii. 5, 7; Acts xxiv. 5). The apostles and the early Christians seem to have adopted the scornful term as a name of glory; and well might they do so if Jerome's view, adopted by many ancients and moderns, is correct—that Nazarene—the Man from Nazareth—is literally the title *Netser* (shoot or sprout from a root) which is given to the Messiah in the ancient prophets (comp. Is. xi. 1; Matt. ii. 23; and note the similar idea Jer. xxiii. 5; xxxiii. 15; Zech. iii. 8; vi, 12). In this view, whenever men, either in praise or in scorn applied this term to Christ, they uttered one of the long-predicted names of the Messiah.—Nazarene or Nazarean was the name also of a Judaizing sect in the early church—a party among the Ebionites (q.v.) NAZ′ARE′AN, a. *-rē′ăn*, pert. to the sect of Judaizing Jews. NAZAREANS (see CHRISTIANS OF ST. JOHN).

NAZARETH, *năz′a-rĕth*: small town or village of Palestine, anciently in the dist. of Galilee, and in the territory of the tribe of Zebulon, about 62 m. n. of Jerusalem, 18 m. w. of the lower end of the sea of Galilee, 21 m. s.e. of the Mediterranean Sea at Acre. It is on the s. slope of the hills which are the n. boundary of the great plain of Esdraelon, and is built partly on the sides of some rocky ridges, partly in some of the ravines by which they are seamed. It is celebrated as the scene of the Annunciation, and the place where the Lord Jesus spent the greater part of his life in obscure labor. In the earliest ages of Christianity, N. was quite overlooked by the church. It did not contain a single Christian resident before the time of Constantine, and the first Christian pilgrimage to it was in the 6th c. The principal building is the Latin convent, reared, according to pious tradition, on the spot where the angel announced to the Virgin the birth of her Savior-son; but the Greeks also have erected, in another part of N., a church on the scene of the Annunciation. Besides these rival edifices, the traveller is shown a Latin chapel, affirmed to be built over the 'workshop of Joseph;' also the chapel of 'the Table of Christ' (*Mensa Christi*), a vaulted chamber, containing the veritable table at which our Lord and his disciples used to eat; the synagogue, out of which he was thrust by his townsmen; and 'the Mount of Precipitation,' down which he narrowly escaped being cast headlong. The women of the village have long been noted for beauty. Pop., according to Dr. Robinson, 3,120, of whom 1,040 are Greeks, 520 Greek Catholics, 480 Latins, 400 Maronites, and 680 Mohammedans. (Porter thinks 4,000 a moderate estimate.)

NAZARITES, *năz'a-rīts* (properly NAZIRITES) [from Heb. *nazar*, to separate or consecrate one's self]: among the Jews, those persons, male or female, who had consecrated themselves to God by certain acts of abstinence, which 'separated' them from the rest of the community. In particular, they were prohibited from using wine or strong drink of any kind, and every product of the grape-vine, and from shaving their heads. The law in regard to N. is laid down in the Book of Numbers (vi. 1–21). The only examples of the class recorded in Scripture are Samson, Samuel, and John the Baptist, who were devoted from birth to that condition, though the law appears to contemplate temporary and voluntary, rather than perpetual Nazariteship. NAZARITISM, n. practice or doctrines of the Nazarites.

NAZE, n. *nāz* [F. *nez;* Ger. *nase*—from L. *nāsus*, nose]: a cliff or headland.

NE, ad. *nĕ* [AS. *ne* (see NAY and NOT)]: in *OE.*, not; nor.

NEAGH, LOUGH, *loċh nā*, locally *loċh nā'âċh:* largest lake of the British Islands; in the province of Ulster, Ireland; surrounded by the counties of Armagh, Tyrone, Londonderry, Antrim, and Down. It is 18 m. (English) in length, and 11 m. in breadth, covering 98,255 acres; 120 ft. in greatest depth, and 48 ft. above sea-level at low water. It receives the waters of numerous streams, of which the principal are the Upper Bann, the Blackwater, the Moyola, and the Main; and its surplus waters are carried off northward to the North Channel by the Lower Bann. Communication through canals subsists between the Lough and Belfast, Newry, and the Tyrone coal-field. In some portions of the Lough, the waters show remarkable petrifying qualities, and petrified wood found in its waters is manufactured into hones. The s. shores of the Lough are low and marshy, and dreary in appearance. It is well stocked with fish.

NEAL, v. *nēl:* sometimes used for ANNEAL, which see.

NEAL, *nēl*, DANIEL: English Congl. minister and author: 1678, Dec. 14—1743, Apr. 4; b. London. He was educated first at Merchant Taylors' School, and at a dissenting acad.; afterward at Utrecht and Leyden, in Holland; and 1706 succeeded Dr. Singleton as pastor of a congregation in London. N.'s first work was a *History of New England* (1720), which had very favorable reception in America. Two years afterward he published a tract, entitled *A Narrative of the Method and Success of Inoculating the Small-pox in New England by Mr. Benjamin Colman*, which excited considerable attention; but the production on which his reputation rests is *History of the Puritans* (4 vols. 1732–38), a work of great labor, and invaluable as a collection of facts and characteristics both to English churchmen and to dissenters. It involved its author in several controversies; but Neal's conscientious accuracy as to fact cannot be successfully impeached, though his strong prepossession in favor of the Puritans is quite evident. He died at Bath.

NEAL, JOHN: American author and poet: 1793, Aug. 25—1876, June 20; b. Falmouth, now Portland, Maine; of Scottish descent. His parents belonged to the Society of Friends, of which he was a member until disowned, at the age of 25, because he failed to live up to the rule of 'living peaceably with all men.' With the scanty education of a New England common school, he became a shop-boy at the age of 12; but learned and then taught penmanship and drawing. At the age of 21, he entered a haberdashery trade, first in Boston, and then in New York; and a year after, became a wholesale jobber in this business at Baltimore, in partnership with another American literary and pulpit celebrity, John Pierpont. They failed in 1816, and N. turned his attention to the study of law. With the energy which acquired for him the *sobriquet* of 'Jehu O'Cataract,' affixed to his poem, *The Battle of Niagara*, he went through the usual seven years' law-course in one, besides studying several languages, and writing for a subsistence. In 1817, he published *Keep Cool*, a novel; the next year, a volume of poems; in 1819, *Otho*, a five-act tragedy; and in 1823, four novels—*Seventy-six*, *Logan*, *Randolph*, and *Errata*. These impetuous works were each written in from twenty-seven to thirty-nine days. In 1824, he came to England, where he became a contributor to *Blackwood's* and other magazines and reviews, and enjoyed the friendship and hospitality of Jeremy Bentham. On his return to America, he settled in his native town, practiced law, wrote, edited newspapers, gave lectures, and occupied his leisure hours in teaching boxing, fencing, and gymnastics. Among his numerous works are *Brother Jonathan*, *Rachel Dyer*, *Bentham's Morals and Legislation*, *Authorship*, *Down-Easters*, etc. After a long silence, devoted to professional business, he published, in 1854, *One Word More;* and in 1859, *True Womanhood*. The latter work, though a novel, embodies the more serious religious convictions of his later years. In 1869 appeared his *Wandering Recollections of a Somewhat Busy Life;* and in 1874, *Portland Illustrated*. He died at Portland.

NEALE, *nēl*, JOHN MASON, D.D.: 1818, Jan. 24—1866, Aug. 6; b. London. He graduated from Trinity College, Cambridge, 1840, after having taken the members' prize 1838. In 1842 he took orders in the Anglican Church, and became incumbent of Crawley, Sussex. In 1846 he was appointed warden of Sackville College, East Grinstead. 1845–61 he took the Seatonian prize at Cambridge, for the best sacred poem, no less than 11 times. He was a zealous adherent of the ritualistic party in the church, many of his writings bearing on the subject of ritual and liturgy. In 1855 he founded, at East Grinstead, the Anglican sisterhood of St. Margaret. His writings were voluminous, no less than 70 vols. coming from his pen, mostly on ecclesiastical subjects. He issued also a revised edition, for children, of Bunyan's *Pilgrim's Progress*, his notes to which were occasion of consider-

able controversy at the time. Some of the more important of his publications were: *The History of the Holy Eastern Church, the Patriarchate of Alexandria* (2 vols. 1850-1); *Mediæval Preachers and Mediæval Preaching* (1857); *History of the so-called Jansenist Church of Holland* (1858); *Commentary on the Psalms* (1860); *Hymni Ecclesiæ* (new ed. 1865); *Essays on Liturgiology and Church History* (1863); *The Liturgies, in Greek, of St. Mark, St. James, St. Clement, St. Chrysostom, and St. Basil* (1868); *Hymns of the Eastern Church, with Notes and Introduction* (1871); *Mediæval Hymns from the Latin*, etc. He died at East Grinstead.

NEANDER, *nē-ăn'dĕr*, Ger. *nā-ân'dĕr*, JOHANN AUGUST WILHELM: 1789, Jan. 17—1850, July 14; b. Göttingen; of Jewish parentage: greatest of ecclesiastical historians. His name prior to baptism was David Mendel. By the mother's side, he was related to the eminent philosopher and philanthropist Mendelssohn (q.v.). He received his early education at the Johanneum or grammar school in Hamburg; and had for companions, Varnhagen von Ense, Chamisso the poet, Wilhelm Neumann, Noodt, and Sieveking. Here N.'s companions and teachers soon felt that a certain oddity of appearance and manner concealed a singular spiritual beauty and a surprising mental power. Already the abstract, lofty, and pure genius of N. was beginning to show itself. Plato and Plutarch were his favorite classics as a boy; and he was profoundly stirred by Schleiermacher's famous *Discourses on Religion* (1799). Finally, 1806, he publicly renounced Judaism, and was baptized, adopting, in allusion to the religious change which he had experienced, the name of N. (Gr. *neos*, new; *aner*, a man), and taking his Christian names from several of his friends. His sisters and brothers, and later his mother, followed his example. He now proceeded to Halle, where he studied theology with wonderful ardor and success under Schleiermacher, and concluded his academic course at his native town of Göttingen, where Planck was then in the zenith of his reputation as a church historian. In 1811, he took up his residence at Heidelberg Univ. as a privat-docent; 1812, he was appointed there extraordinary prof. of theology; and in the following year was called to the newly established Univ. of Berlin as prof. of church history. Here he labored till his death. N. had immense celebrity as a lecturer. Students flocked to him not only from all parts of Germany, but from the most distant Prot. countries. Many Rom. Catholics, even, were among his auditors, and it is said that there is hardly a great preacher in Germany who is not more or less penetrated with his ideas. His character, religiously considered, is of so noble a Christian type, and was in such a degree the source of his intellectual activity, that it calls for special notice. Ardently and profoundly devotional, sympathetic, glad-hearted, profusely benevolent, and without a shadow of selfishness resting on his soul, he inspired universal reverence, and was himself, by the

mild and attractive sanctity of his life, a more powerful argument for Christianity than even his writings themselves. Perhaps no professor was ever so much loved by his students as Neander. He used to give the poorer ones tickets to his lectures, and to supply them with clothes and money. The greater portion of what he made by his books he bestowed on missionary, Bible, and other societies, and on hospitals. As a Christian scholar and thinker, he ranks among the first names in modern times, and is believed to have contributed more than any other single individual to the overthrow, on the one side, of that anti-historical Rationalism, and, on the other, of that dead Lutheran formalism, from both of which the religious life of Germany had so long suffered. To the delineation of the development of historical Christianity, he brings one of the broadest, one of the most sagacious (in religious matters), one of the most impartial yet generous and sympathetic, intellects. His conception of church history as the record and portraiture of all forms of Christian thought and life, and the skill with which, by means of his sympathy with all of these, and his extraordinary erudition, he elicits, in his *Kirchengeschichte*, the varied phenomena of a strictly Christian nature, have placed him far above any of his predecessors. Though his style lacks certain elements of attractiveness—not being graphic or pictorial—his writings are quickening with spiritual insight, rich in the profoundest philosophy, and gifted with that deep vision which comes by the widest sympathy. N.'s works, in the order of time, are: *Ueber den Kaiser Julianus und sein Zeitalter* (Leip. 1812); *Der Heil. Bernhard und sein Zeitalter* (Berl. 1813); *Genetische Entwickelung der vornehmsten Gnostischen Systeme* (Berl. 1818); *Der Heil. Chrysostomus und die Kirche, besonders des Orients, in dessen Zeitalter* (2 vols. Berl. 1821–2; 3d ed. 1849); *Denkwürdigkeiten aus der Geschichte des Christenthums und des Christlichen Lebens* (3 vols. Berl. 1822; 3d ed. 1845–6); *Antignosticus, Geist des Tertullianus und Einleitung in dessen Schriften* (Berl. 1826); *Allgemeine Geschichte der Christlichen Religion und Kirche* (6 vols. Hamb. 1825–52); *Geschichte der Pflanzung und Leitung der Kirche durch die Apostel* (2 vols. Hamb. 1832–3; 4th ed. 1847); *Das Leben Jesu Christi in seinem geschichtlichen Zusammenhange*, written as a reply to Strauss's work (Hamb. 1837; 5th ed. 1853); *Wissenschaftliche Abhandlungen*, published by Jacobi (Berl. 1851); *Geschichte der Christlichen Dogmen*, also published by Jacobi (1856). The majority of these works, including the most important, have been translated into English, and form more than a dozen volumes of Bohn's 'Standard Library.'

NEAP, a. *nēp* [Icel. *neppr*, narrow, contracted: Dan. *neppe*, scarcely; *knap*, scanty]: scanty; deficient; low; applied to the tides which occur about the first and last quarters of the moon, and which are called *neap-tides*; the *spring-tides* are the highest tides (see TIDES). NEAPED, a. *nēpt*, left aground by the tides as a ship; also BE-NEAPED, a. *bĕ-nēpt*.

NEAPOLITAN, a. *nē′ă-pŏl′ĭ-tăn:* of or relating to Naples: N. an inhabitant of Naples.

NEAR, a. *nēr* [Goth. *nehv*, nigh: AS. *neah*, nigh; *near*, nearer: Icel. *na*, *nærri*, *nærstr*, near, nearer, nearest]: not far distant; intimate; closely related by blood or affection; literal; not loose or rambling; direct; short, as a road to a place; next to one; parsimonious; on the left; opposed to *off* in riding or driving: AD. almost; within a little: PREP. at no great distance from; close to, followed by *to*, expressed or understood, as, the ship is *near* the harbor: V. to approach; to come nearer; to draw near. NEAR′ING, imp. NEARED, pp. *nērd.* Compar. NEAR′ER, a. *-ẽr*, more near. Superl. NEAR′EST, a. *-ĕst*, most near. NEAR′LY, ad. *-lĭ*, closely; at no great distance; almost; within a little. NEAR′NESS, n. *-nĕs*, small distance; closeness; close alliance by blood; closeness in expenditure. NEAR AT HAND, or NEAR HAND, not far distant; closely. NEAR-SIGHTED, a. seeing at a small distance only. NEAR-SIGHTEDNESS, n. the state of being short-sighted. FAR AND NEAR, distant and at hand. *Note.*—It will be observed that NEAR is really the comparative of NIGH.—SYN. of 'near, a.': nigh; close; proximate; direct; straight; adjacent; contiguous; familiar; dear; intimate; ready; present.

NEAR, n. *nēr* [Ger. *nier′ĕ*, a kidney; *nier′ĕnfett*, suet]: in *OE.*, a kidney. NEAR-FAT, *prov. Eng.*, the fat about the kidneys; suet.

NEARCHUS, *nē-ârʹkŭs:* commander of the fleet of Alexander the Great in his Indian expedition (B.C. 327–326): b. in Crete; son of Androtinus, a distinguished officer in Alexander's army. He settled in Amphipolis, and B.C. 329 he joined Alexander in Bactria with a body of Greek mercenaries, and when the latter ordered a fleet to be built on the Hydaspes, N. received the command of it. He conducted it from the mouth of the Indus to the Persian Gulf, in spite of great obstacles, resulting partly from the weather and partly from the mutinous disposition of his crews. N. left the Indus 325, Sep. 21, and arrived at Susa, in Persia, 324, Feb., shortly after Alexander himself, who had marched overland. Fragments of his own narrative of his voyage have been preserved in the *Indica* of Arrian.—See Dr. Vincent's *Commerce and Navigation of the Ancients in the Indian Sea.* (1807); Geier's *Alexandri Magni Historiarum Scriptores*; and histories of Greece by Grote and others.

NEAT, a. *nēt* [F. *net*, neat—from L. *nĭtĭdus*, clean, trim—from *nĭtĕō*, I shine: Gael. *nigh;* Skr. *nig*, to cleanse]: tidy; spruce and clean; not tawdry; trim; pleasing with simplicity; pure; unadulterated. NEATLY, ad. *nēt′lĭ*, tidily; with good taste; cleverly. NEAT′NESS, n. *-nĕs*, the condition or quality of being neat; good taste in style of dress or literary composition. NEAT-HANDED, clever and tidy; finished; exact.—SYN. of 'neat': spruce; clean; cleanly; nice; excellent; unmixed; net.

NEAT, n. *nēt* [Icel. *naut*, an ox, cattle: AS. *nyten*, cattle in general—from *neotan*, to employ (see NOWT)]: cattle, as the ox, the cow, etc. NEAT-HERD, a cow-keeper; a herdsman. NEAT'S-FOOT OIL, oil procured from the fat of cattle by boiling, used to render leather pliable.

NEATH, *nēth:* parliamentary and municipal borough and river-port of the county of Glamorgan, s. Wales, on the navigable river N., seven m. n.e. of Swansea. It is on the site of the Roman station *Nidum*, and contains the remains of an ancient castle, burned 1231. In the immediate vicinity are the imposing ruins of Neath Abbey, described by Leland as 'the fairest abbey in all Wales,' but now sadly decayed and begrimed by smoke and coal-dust. There are at N. several very extensive tin-plate and copper works. Copper, spelter, iron and tin plates, and fine bricks are largely exported, stones are quarried, and coal and culm are mined. The trade of the port has greatly increased within late years. Pop. 13,700.

NEB, n. *nĕb* [AS. *neb*, a beak, nose, face: Icel. *nebbi*; Dut. *nebbe*, the beak of a bird: Scot. *neb*, any sharp point]: the beak of a bird; the nose; the snout; the mouth; a nib.

NEB-NEB, *nĕb'nĕb*, or NIB-NIB, *nĭb'nĭb:* dried pods of *Acacia Nilotica*, one of the species of Acacia (q.v.), which yield gum arabic. This species is a native of Africa, and the pods are much used in Egypt for tanning, and have been exported to Britain.

NEBO, *nē'bō:* one of the five planetary gods of the religion common to the Chaldæans, Babylonians, and Assyrians. His star was Mercury, and he was accounted son of Hoa, a Chaldæan Poseidon or Neptune, god of 'the great deep' (not the sea), and of science and knowledge taught to man. The symbol, both of Hoa and of N., is the wedge or arrow-head, which represents writing and literature. In the greatest of Nebo-worship temples, that of Borsippa, his special Babylonian seat, there was an oratory or chapel, every brick of whose walls bears the arrow-head stamp. He was mythologically, in the common religion, of little account; but rose very high in later times in Babylonia, as the presiding deity of the magnificent kings who gathered libraries and had pride in knowledge, and most of whose names contained the name of Nebo. The great Borsippa temple of N., now *Birs Nimrúd*, was known as *Bit-Tsida*, a designation from very early Chaldæan times, the meaning of which was probably unknown even to the Babylonians. The name, *Nabiu* in Babylonian and *Nabu* in Assyrian, is assigned to the Semitic root *nibbah*, 'to prophesy,' and N. was designated 'the god who possesses intelligence,' 'he who instructs.' Statues representing him, one, a statue set up by Pul, of Assyria, at Calah (*Nimrúd*), one of the shrines of N.—are now in the British Museum. Nebuchadnezzar rebuilt the Borsippa temple, and the worship lasted till more than 300 years after Christ.

NEBRASKA.

NEBRASKA, *nē-brăs'ka:* state: one of the United States of America; 37th in order of admission into the Union, 3d (1900) in corn, 9th in barley, 2d in rye, 27th in population, 19th in manufactures; named from the Nebraska river, meaning 'shallow water.'

Location and Area.—N. is in lat. 40°—43° n., long. 95° 23′—104° w.; bounded n. by S. D., e. by Io. and Mo.; s. by Kan. and Colo., w. by Wyo. and Colo.; extreme length e. to w. 412 m., greatest breadth n. to s. 208 m.; 76,855 sq. m. (49,187,200 acres); cap. Lincoln.

Topography.—The state is almost wholly a rolling prairie, trending toward the e., with hills of considerable height in the 'Bad Lands' of the n.w., high bluffs along the rivers, and ample and even drainage in the e. Numerous small bodies of water are found, but none deserving the name of lakes. The chief drainage is by the Missouri river, which forms the entire e. boundary, and its affluents, the Niobrara, Nebraska or Platte, Great and Little Nemahas, and Weeping Water. The south is drained by the Republican fork of the Kansas river; and the Big Blue, another large tributary of the Kansas, also waters large s. and s.e. tracts. The Nebraska traverses the state from w. to e., and the Niobrara extends nearly the same distance and in the same direction. Excepting the Missouri, the rivers of N. are of little value for navigation. The soil, containing a siliceous marl resembling the German loess, is adapted best to agriculture and grazing. Wide fertile bottom-lands extend along the broadest streams, and the richest upland soil is found, averaging 20 m. in thickness, while vegetable humus or black mold frequently extends to a depth of 20 ft. Wild grasses thrive luxuriantly, the 'blue joint' attaining a height of 6 ft., and yield from 1½ to 4 tons of hay per acre, while 35 bushels of wheat to the acre is not an uncommon yield.

Climate.—The climate is dry and exhilarating; winters comparatively short; spring begins in Mar.; open weather continues till Dec.; corn-planting begins in Apr.; frequent high winds and severe storms; greatest rainfall in May and June. The mean winter temperature ranges from 22° to 30°; spring 47° to 49°; summer 70° to 74°; autumn 49° to 51°. The hygienic advantages are elevation, dryness, abundance of ozone, and excellent drainage, making the state particularly beneficial to consumptive people; and the disadvantages are the prevalence of rheumatism, neuralgia, and, in places, malaria.

Geology.—The geological formations are limited almost wholly to the carboniferous, Permian, cretaceous, and tertiary; and of the first only the upper is found, occupying 2,500 sq. m. in the s.e., and showing best in Richardson co. Prof. Aughey, state geologist, says that in Pliocene times the Republican river and its valley constituted a great geyser region, and that curious beds of flour-like geyserite are still found along the river, equalling the best tripoli for polishing purposes. Numerous

memorials of the glacial epoch are found—hard limestones, worn smooth and crossed by glacial scratches in a direction averaging 17° e. of s. Above the surface rock are, in their order: blue clay (1–30 ft.); modified drift, gravel, and clay (1–9); gravel and bowlders (1–6); black soil containing silicified wood; gravel, sand, and drift bowlders; calcareous sand; loess (2–200); and black surface soil (1–30). Prof. Aughey also says that, after the ice age, a fresh-water lake covered much of N. and the adjoining region on the e. and s.e., and that it was gradually filled up with sediment brought down by the Missouri river. The mineral wealth of the state consists mainly of bituminous, block, and lignite coal, all in thin beds, with a little iron, several valuable beds of limestone, yellowish-gray sandstone, and red freestone for building; deposits of good brick and pottery clay; and extensive salt springs in the s.e. with the principal basin in Lancaster co., 12 by 25 m., showing 29 per cent. of remarkably pure salt. Alum in paying quantity has been discovered, and extensive beds of peat partially compensate for absence of marketable coal. Cottonwood, oak, elm, maple, black walnut, cedar, hickory, hackberry, and pine are the principal woods, all but the latter (in the n.w.) growing on the bluffs and river-banks. Planted timber grows rapidly on the prairie. Since the establishment of arbor-day (1872), much attention has been given to tree-planting in various parts of the state, and the public-school children alone have set out 400,000,000 forest, shade, and fruit trees.

Zoology.—N. was at one time the home of unlimited hordes of buffalo, elk, deer, Rocky Mountain sheep, black, brown, and grizzly bear, antelopes, panthers, wolves, coyotes, beaver and foxes; but nearly all these animals have been exterminated. Some of the smaller are still found, with numerous rodents, two species of venomous serpents, and many harmless ones. Game birds are numerous, including wild turkeys and grouse; and nearly all the birds of prey, fine plumage, and singers, common to the Rocky Mountain region, abound. Various fish, mollusks, and reptiles are found in the principal streams, and fish-breeding has been attempted at several points.

Agriculture.—There are well over 125,000 farms in the state, comprising over 35,000,000 acres, the total value being more than $1,000,000,000. Of late years irrigation has played its part in increasing the agricultural value of N., while the fact that both winter and spring wheat grow readily, a condition brought about only within the last dozen years, is also of importance. The principal crops are wheat, corn, oats, rye, barley, potatoes, beet sugar, broom corn, millet, sorghum, alfalfa, timothy, hay, and clover. Wheat, beet sugar, and corn are particularly valuable products. Poultry, milk, butter, cheese, and eggs are all produced in great quantities, being collectively worth

Area in Square Miles, 77,510

Number of Counties, 90.

Population, 1,066,300.

Capital of State, Lincoln.

nearly $20,000,000 annually. All of the principal fruits are successfully raised in great abundance.

Manufactures.—The leading industry is slaughtering and meat packing, centred around South Omaha, which is among the foremost cities in the country in this industry. Other leading manufacturers of the State are flour and grist-mill products, railroad car shops, printing and publishing, butter and cheese; malt liquors, and beet sugar. The total value of all manufactured products in the state is about $160,000,000 a year.

Railroads.—Considering the comparative newness of the state, N. has a remarkably well-developed railroad system, its aggregate mileage consisting of nearly 6,000 miles. Four trunk lines traverse the state from east to west—the Chicago & Northwestern system on the n.; the Union Pacific through the central part along the Platte river; and the Burlington & Missouri and the Chicago, Rock Island & Pacific through the South Platte section. Many other important lines also traverse other portions of the state. Ramifications of the main lines cover the e. half with a perfect network of tracks, while all sections are well supplied with railroad facilities.

Finance and Banking.—The total assessed valuation of all property in the state, including both personal and realty, is $412,138,607, and the tax rate $5 per $1,000. There is no bonded debt. There are well over 125 national banks and about 500 State banks.

Education.—The state annually spends over $5,500,000 in the maintenance of its public schools, in which there are nearly 300,000 pupils enrolled, with nearly 10,500 teachers. Devotion to the cause of education of the popular sort and an efficient system of schools characterize N. as they do all other prairie states. There are two state normal and training schools, one at Peru and the other at Kearney. There are also colleges and universities for men only and colleges and universities of a co-educational nature; numerous private seminaries; about 20 denominational primary schools; and schools of technology, law, and medicine. Of the institutions for higher education the most prominent is unquestionably the S. University, which is located at Lincoln. The S. University and the agricultural college are united or fused under one general management. The agricultural college has a fine farm of nearly 400 acres, which is contiguous to the city of Lincoln, while the campus is located in the heart of the city. The following institutions of higher education in the state give the usual college degrees: Bellevue College (Presbyterian), Bellevue; Cotner University, under the auspices of the Christian Church, at Lincoln; Union College (Seventh Day Adventist), at Lincoln; Doane College (Congregationalist) at Crete; Fremont Normal College, at Fremont; Grand Island College (Baptist), at Grand Island; Hastings College

(Presbyterian), at Hastings; Creighton University (Roman Catholic), at Omaha; Nebraska Wesleyan University (Methodist), at Lincoln; Nebraska Normal College, at Wayne; and York College, at York.

Religion.—All the Christian denominations are organized in the state. Altogether there are about 2,500 church edifices in N. The Roman Catholic denomination is the strongest, followed by the Methodist Episcopal, the Lutheran, the Disciples of Christ, the Presbyterian, the Baptist, and the Congregationalist. The Jews are also well represented.

Charities and Corrections.—The charitable and corrective institutions of the State include the N. Hospital for the Insane at Lincoln; the Asylum for the Incurable Insane at Hastings; N. Soldiers' and Sailors' Home at Grand Island; Soldiers' and Sailors' Home at Milford; Home for the Friendless (children), at Lincoln; State Industrial School (for boys) at Kearney; Girls' Industrial School at Beatrice; Institute for the Deaf and Dumb at Milford; N. Institute for Feeble-minded Youth at Beatrice; Institute for the Deaf and Dumb at Omaha; and the State penitentiary at Lincoln.

History.—N. was included in the La. Terr., ceded by France to the United States 1803; and was explored by Capts. Lewis and Clarke (q.v.) 1804-5. In 1812 a part of the terr. was erected into the state of La., and the remainder was organized as the terr. of Mo. The present limits of N. were occupied by the Sioux, Otoe, Iowa, Missouri, Winnebago, Omaha, Sac, Fox, and other Indian tribes; and for many years the only part of the new terr. deemed safe and inviting to immigrants was that now in the state of Mo. In 1821 a part of this terr. was admitted as a state, the remainder continuing in terr. form. The first step toward the creation of the state of N. was 1844, when a bill was introduced in congress providing for the establishment of N. Terr. from the part of Mo. Terr. containing the future states of N., Kan., N. D., S. D., and (parts) Colo., and Wyo. Terr. No progress was made by the bill that year, or the next, when it was reintroduced in amended form. Another attempt in the same direction was made 1848, but nothing was gained. The project slumbered till 1853, when the celebrated bill for the admission of Kan. (q.v.) and N. was introduced. Kan. was much disturbed by events growing out of the virtual repeal of the Missouri Compromise, and the 'squatter sovereignty' doctrine; but N. was too sparsely settled to be materially affected. On the understanding that the terr. was to be 'free' forever, the terr. of N. was created 1854, and included parts of the present Dakotas, Mont., Wyo., and Colo. In 1861 the extent of the terr. was diminished by the organization of Dak. and Colo. territories; 1864 of Mont.; and 1868 of Wyo. Owing to Indian depredations, the lack of precious and

non-precious metals, and inadequate means of communication, the progress of the terr. was slow. The advent of the Union Pacific railroad on its w. border, and the selection of Omaha for the e. terminus, drew attention to the exceptional agricultural advantages of the terr. Substantial tides of immigration and eastern capital set in; and the terr. was admitted as a state 1867, Mar. 1. Its first constitution was in force till 1875, when the present one was adopted. The terr. sent 3,157 men to the Union armies during the civil war.

State Government.—In 1875 the present constitution of the State succeeded that adopted at the time of its admission. The legislature consists of a senate of 33 members and a house of 100 members—the maximum number allowed by the constitution. Its sessions are biennial and the pay of members for each session is limited to 60 days. Members of both houses are elected for two years. The executive department consists of governor, lieutenant-governor, secretary of state, auditor of public accounts, treasurer, superintendent of public instruction, attorney-general and commissioner of public lands and buildings, who hold office for two years. There are three judges of the supreme court who hold their office for the term of six years. Owing to the practical difficulty of amending the state constitution other de facto officers have been provided for indirectly by creating various boards who are nominally assistants of the regular state officers. Thus there are at present nine supreme court commissioners who perform the same duties as the regular judges except that they have no power to enter judgments. There was formerly a board of railway commissioners created on the same plan, but it was abolished on the ground of uselessness by the legislature in 1901. There are 15 judicial districts which require 27 judges whose term of office is four years; and a county judge for each county whose term of office is two years. The several counties may adopt the township system, under which the county board of supervisors is composed of the supervisors from the several townships and municipalities, or the county commissioner system. Under the latter there are three commissioners in counties with not more than 125,000 inhabitants, and five commissioners in all other counties; but counties of not more than 125,000 inhabitants may by popular vote decide to have five commissioners. The term of office of county commissioners is three years. There are six congressional districts in the state.

The successive govs., with their terms of service, are as follows: *Terr.*—Francis Burt, 1854; T. B. Cuming (act'g), 1854-5; Mark W. Izard, 1855-58; William A. Richardson, 1858; J. S. Morton (act'g), 1858-9; Samuel W. Black, 1859-61; Alvin Saunders, 1861-66; David Butler, 1866-7. *State*—David Butler, 1867-71; W. H. James (act'g), 1871-73; Robert W. Furnas, 1873-75; Silas Garber, 1875-79; Albinus Nance, 1879-83; James

W. Dawes, 1883-87; J. M. Thayer, 1887-91; J. E. Boyd, 1891-93; L. Crouse, 1893-95; S. A. Holcomb, 1895-99; W. A. Poynter, 1899-1901; C. H. Dietrich, 1901-3; J. H. Mickey, 1903-5; G. L. Sheldon, 1905-7; A. C. Shallenberger, 1907-9; Chester H. Aldrich, 1909—.

Counties, Cities and Towns.—N. is divided into 90 counties. In 1910 the most populous *counties* were: Douglas, 168,546; Lancaster, 73,793; Gage, 30,325; Dodge, 22,145; Otoe, 19,323; Saunders, 21,179; Cass, 19,786; Buffalo, 21,907. In 1910 there were 21 cities with a population of over 2,500. Omaha had 124,096; Lincoln, 43,973; South Omaha, 26,259. The cities next in size are Beatrice, Grand Island, Nebraska City, Fremont, and Hastings, all above 7,000.

Politics.—State, congressional, and presidential elections are held Tuesday after the first Monday in Nov. Insane, idiots, convicts, and members of the U. S. army are excluded from voting. Her votes for pres. and vice-pres. have been as follows: U. S. Grant and Schuyler Colfax, 3; 1872, U. S. Grant and Henry Wilson, 3; 1876, Rutherford B. Hayes and William A. Wheeler, 3; 1880, James A. Garfield and Chester A. Arthur, 3; 1884, James G. Blaine and John A. Logan, 5; 1888, Benjamin Harrison and Levi P. Morton, 5; 1892, Benjamin Harrison and Whitelaw Reid, 8; 1896, William J. Bryan for pres. 8, and Arthur Sewall and T. E. Watson for vice-pres. 4 each; 1900, William McKinley and Theodore Roosevelt, 8; 1904, Theodore Roosevelt and C. W. Fairbanks, 8.

Population.—(1870) 122,993; (1880) 452,402; (1885) 740,645; (1890) 1,058,910; (1900) 1,069,539; (1910) 1,192,214.

NEBRASKA CITY: city, county seat of Otoe County, Neb.; on the Missouri river, and on the Missouri P. and the Burlington & M. R. R. R.'s; about 45 miles in direct line east by south of Lincoln, the capital of the state, and 40 miles below Omaha. It is in a fertile agricultural region. It is built on the site of old Fort Kearney (1848) and was laid out in 1855. It was incorporated in 1871 and chartered in 1891. The chief manufacturing establishments are flour and lumber mills, planing mills, a cannery, brick works, breweries, a distillery, starch factory, foundries, machine shops, and cereal mills; employing in all about 2,000 persons. It has large grain elevators, cold storage buildings, lumber yards, stock yards, and packing and provision house. It is the seat of the State Institute for the Blind and the Academy of the Annunciation. It has a public library, a government building, city and county buildings, a number of churches, a high school, and public and parish elementary schools. The government is administered under the charter of 1891, which provides for a mayor, elected biennially, and a council of eight members, one-half of whom are elected by wards and the other four at large. Pop. (1910) 5,488.

NEBRAS'KA RIVER: see PLATTE RIVER.

STATE CAPITOL AT LINCOLN.

NEBRASKA.

NEBRASKA, University of, at Lincoln, Neb., was founded by act of the legislature in 1869. The first building, now called University Hall, was completed in 1871. The College of Literature, Science and the Arts was opened 6 Sept. 1871, with a faculty of five professors and 90 students. The charter act contemplated six colleges, but an amendment in 1877 reduced the number to five, merging the State Agricultural College and the College of Practical Science into the Industrial College. The Board of Regents, originally 12 members, but now 6, constitute the governing body. The University comprises the graduate school (degrees, Master of Arts and Doctor of Philosophy; the College of Literature, Science and the Arts (degree, Bachelor of Arts); the Industrial College (degree, Bachelor of Science), which includes the School of Agriculture, the School of Mechanic Arts, and the School of Domestic Science; the College of Law (degree, Bachelor of Laws); the College of Medicine (degree, Doctor of Medicine); the School of Fine Arts; the School of Music; and the summer session. Each college and school has its faculty, charged with the instruction and the immediate management thereof. Law and medicine are not organized into departments. All departments are open to both sexes on equal terms. A tax of one mill per dollar on the assessment roll of the state, together with interest income from land sales and land leases are the chief sources of revenue. The University receives the benefit of the Morrill Acts for the maintenance of instruction in branches relating to agriculture and the mechanic arts, and of the Hatch Act, in aid of agricultural experimentation. The 10 buildings on the city campus, with their classrooms, laboratories, libraries and offices, house all the departments except the school of agriculture, the work of which is done mainly at the University farm, and the College of Medicine, in which the last two years' work is given at Omaha. There are five buildings at the farm. This consists of 320 acres, a little removed from the city campus. Here are located the departments of agriculture, animal husbandry, animal pathology, dairying and horticulture. About 100 acres are laid out in experiment plats for field crops, fruit and vegetables. Herds of cattle, sheep and swine are owned, being used for experimentation as well as for instruction. Four new buildings were recently erected, an administration building and a physics laboratory on the city campus, a hall of agriculture, a dairy building, shops, and a horticulture laboratory at the farm. The libraries accessible to the students contain about 133,300 volumes, of which 55,000 are in the University library itself.

NEBRASKA Wesleyan University, The, is located at University Place, four miles from the capital city of Nebraska, has its own municipal government, and is

connected with the city of Lincoln by lines of electric railway. The University is a denominational institution of the Methodist Episcopal Church, organized in 1887 as the result of an effort to unify the educational interests of the denomination within the state. It consists of a College of Liberal Arts, an Academy with courses fitted to the college curriculum, a Normal School, a School of Expression, and a Conservatory of Music. It is coeducational, and its standards for degrees are those required by the college senate of the denomination for its first-class institutions.

NEBUCHADNEZ'ZAR: see BABYLON.

NEBULA, n. *nĕb'ū-lă*, NEB'ULÆ, n. plu. *-lē* [L. *neb'ula;* Gr. *nephĕlē*, mist, a cloud; Ger. *nebel*, mist, fog]: an appearance as of a light gauzy cloud among the stars, usually seen only through a telescope, often resolvable by a powerful instrument into clusters of stars (see NEBULÆ): a white spot or slight opacity on the cornea. NEB'ULAR, a. *lĕr*, of or relating to nebulæ. NEB'ULOUS, a. *-lŭs*, cloudy; hazy; pertaining to a nebula. NEB'ULOUSNESS, n. *nĕs*, or NEB'ULOS'ITY, n. *-lŏs'ĭ-tĭ*, the faint misty appearance which surrounds many stars. NEBULY, n. *nĕb'ū-lĭ*, in *heraldry*, one of the partition lines which runs out and in, in a form supposed to represent the uneven edges of clouds: ADJ. covered or ornamented with wavy lines. NEBULAR HYPOTHESIS, theory or hypothesis which supposes that, in its primal condition, the solar system consisted of a nebulous mass, out of which were gradually evolved the sun, planets, and satellites of our system: see NEBULÆ, below.

NEB'ULÆ: indistinct patches of light in the heavens; in astronomical theory, aggregations in cloud-like form, either of stars too distant to be distinctly seen as separate and solid bodies, or of matter in a very rare state, as nitrogen and hydrogen gases, undergoing formation into new stars by a process of condensation. The increasing powers of the telescope have carried farther and farther the discovery that many of the nebulæ are clusters of innumerable distinct stars, and this has suggested the view that all are of this class, only too remote to be discerned. But against this view are some evidences supplied by the spectroscope, showing conclusively that some of the apparent nebulæ are aggregations of rarely distributed matter, or gases, without any solid or liquid substance. The earlier observations suggested to Laplace the idea, which became developed into what was called the nebular hypothesis, that the nebulæ so widely and numerously observed, are vast rotating masses of the gaseous stuff of which worlds are made, the course of which would naturally be that of condensation into a solar system of bodies such as that to which the earth belongs. The idea had been

suggested by Swedenborg 1734, was taken up by Buffon 1749, and by Kant and Wright, but had a large place in science in the hands first of Laplace, who urged in his *Système du Monde* that a primordial gaseous mass might originally have filled the whole space from the sun to beyond the present limits of the solar system; that this mass contracted with loss of heat by radiation, and, in rotating about a central axis, threw off rings of condensing matter, which, as condensation proceeded, broke up into the planets and their satellites. Laplace did not himself suppose that the nebulæ now observed are similar masses of gaseous matter; he took them to be aggregations of stars, and nebulæ in appearance only. Sir William Herschel 1794 held the same view, but in two memoirs read to the Royal Soc. 1811 and 12, he advanced the conclusion, which Laplace in the later editions of his *Système* adopted, that some of the observed nebulæ, especially the more irregular, must represent primordial gaseous matter, and that our observations reveal the formation from this of (1) condensed clouds of such matter, the irregular nebulæ, of (2) nebulous or half-formed stars, and of (3) stars wholly formed as parts of a system, some of the matter of which is still in the primordial state. The advocacy of this view by Humboldt, Arago, Herbert Spencer, and others, with recent knowledge of the revelations of the spectroscope, of the ring which the asteroids of our system form, of the indications given by the zodiacal light and of some other facts, have secured a great vogue for the nebular hypothesis, as a working theory of the evolution of the physical universe. But other advanced studies, e.g., of Helmholtz and Thomson on vortex rings, of Rankine on molecular vortices, of Maxwell, Pierce, and Hirn on rings like the rings of Saturn, of Schiaparelli on meteors and comets, and of Clausius on molecules, with much new light on the electrical conditions of all chemical action, are reopening many parts of the subject, with a prospect of new conclusions of great significance. In the present state of our knowledge, the question how worlds are formed awaits a final answer, but there seems no doubt of the general fact that throughout infinite space there exist together, though at what relative distances we have not yet the means of knowing, stars, clusters of stars, and gaseous nebulæ. See STARS. The spectroscope shows us bodies of gases, even where the telescope resolves the nebulæ into separate bodies; it shows us also glowing solid masses in some of the nebulæ; and in a third class these two are found combined. The observations of William Huggins of London, since 1864, Aug., have especially contributed to knowledge of these facts. Sir Wm. Herschel's memoir of 1786 recorded 1,000 new nebulæ and clusters; that of 1789 a second 1,000; that of 1802, 500 more. Sir John F. W. Herschel added 1,000 (1825–38). Many have since been added, and in Sir John Herschel's catalogue of 1864 there appeared 5,079.

NECESSARY, a. *nĕs'ĕs-sĕr-ĭ* [F. *nécessaire*—from L. *necessārĭŭs*, indispensable, unavoidable—from *neces'sĕ*, inevitable: It. *necessario*]: that cannot be otherwise; inevitable; essential; acting from necessity or compulsion; decisive by logical consequences: N. something indispensable; an essential (see NECESSITY). NEC'ESSARIES, n. plu. *-ĭz*, things that are daily in use and cannot be dispensed with. NEC'ESSARILY, ad. *-sĕr-ĭ-lĭ*, by inevitable consequence; indispensably; by fate. NEC'ESSARINESS, n. *-ĭ-nĕs*, the state or quality of being necessary. NECESSITARIAN, n. *nĕ-sĕs'sĭ-tā'rĭ-ăn*, or NECESSARIAN, n. *nĕs'ĕs-sā'rĭ-ăn*, one who holds the doctrine of philosophical necessity. NEC'ESSA'RIANISM, n. *-rĭ-ăn-ĭzm*, or NECES'SITA'RIANISM, n. *-ĭzm*, the doctrine of philosophical necessity in regard to the origin and existence of all things, but particularly as applied to acting or choosing (see FREE-WILL). NECES'SITATE, v. *-ĭ-tāt*, to make necessary; to compel; to constrain; to render unavoidable. NECES'SITATING, imp. NECES'SITATED, pp. NECESSITY, n. *nĕ-sĕs'ĭ-tĭ*, that which cannot be otherwise; that which must be (see below): extreme indigence; pinching poverty; irresistible power. NECES'SITIES, n. plu. *-sĭ-tĭz*, things necessary for human life. NECES'SITOUS, a. *-sĭ-tŭs*, pressed with poverty; destitute. NECES'SITOUSLY, ad. *-lĭ*. NECES'SITOUSNESS, n. *-nĕs*, extreme poverty or destitution. OF NECESSITY, by necessary consequence; by compulsion.—SYN. of 'necessary, a.': requisite; needful; inevitable; unavoidable; fatal; indispensable; involuntary; conclusive; decisive.

NECES'SITY: in philosophy, a word frequently used, but unfortunately vague in its signification. It occurs in connection with two different philosophical subjects; namely, the freedom of the will (see FREE-WILL); and the nature of our belief in fundamental truths such as the axioms of mathematics. It is alleged by some philosophers, that the truths held by us as most certain are the result of experience, and that the degree of certainty is but a measure of the universality of the experience. Others contend that such first principles as the axioms of mathematics are not only true, but *necessarily* true—i.e. it is impossible that they should have been otherwise. Such necessity, it is argued, cannot come from mere experience, and therefore implies an innate or intuitive force. Hence the theory of necessary truth is another name for the theory of instinctive or intuitive truth.

Necessity is a word too vague in its signification to serve as a leading term in philosophy. There are several meanings attaching to it.

1. Necessity, in the first place, means that one fact or statement is *implied* in another. Thus, if we say that all Christ's apostles were Jews, it follows necessarily that Peter was a Jew; this is not a new fact, but merely a re-assertion of a portion of the same fact. We are not at liberty to affirm a thing in one form, and then deny the same thing expressed in a different form. If we say this room is hot, it is repeating the assertion in another way,

to say that it is not cold. These truths follow by necessary inference. Hence the general axiom of the syllogism, that what is true of a whole class must be true of each individual, is a necessary truth in this sense. In affirming such a truth, we merely declare that we shall be consistent, and that when we have affirmed a proposition in company with other propositions, we are prepared to affirm it when taken apart from the others. This kind of necessity is sometimes called Logical necessity, and sometimes Mathematical necessity. We might call it Deductive necessity, or necessity by Implication

2. A second meaning is Inductive certainty; or the certainty that arises from a well-grounded experience. That lead will sink in water; that animals need food and air in order to live; that warmth promotes vegetation; are truths that we call necessary, in the sense of being so certain that we may always count upon them. We presume with the highest confidence, that an unsupported body will fall to the ground, not because the fact of falling is implied in the fact of matter, but because nature has uniformly conjoined the two facts. We can speak even of moral necessity; by which we mean only uniform sequence and consequent certainty. When we declare that children whose education has been neglected must fall into evil courses, we declare what experience has shown us will happen in relation to the human mind.

3. When necessity means neither deductive implication, nor inductive certainty, it refers us to a peculiar test supposed to apply to the truths in dispute—namely, the inconceivableness of their opposite. It is said that, not only can we not *believe* in the opposite of the axiom that 'the sums of equals are equal,' but we cannot even *conceive*, imagine, or picture to ourselves the opposite of it. This impossibility of conceiving the contradiction of any statement is regarded by many as a peculiarly cogent circumstance in its favor. It distinguishes the axiomatic first principles from the truths of inductive science, these having, it is said, an inferior order of certainty. To this it may be replied, however, that men's power of conceiving is so much affected by their education and habits, that many things, whose opposites were at one time inconceivable, have since been found false; e.g., the notion that men could live at the antipodes was once reckoned inconceivable, and we now know it to be a fact. An unvarying association will often produce a disability to conceive anything different.

In commencing a discussion as to the necessary character of any truth, the disputants should agree beforehand which of the three meanings they intend. In the controversy on the Mathematical axioms, maintained between Dr. Whewell on the one hand, and Sir John Herschel and John Stuart Mill on the other, the third meaning is more particularly involved. The doctrine of Inconceivability, as the test of truth, has been put forward by Herbert Spencer, under the title of the **Universal Postulate** (*Principles of Psychology*, Part. I.).

NECHES, *nĕch′ĕz*, RIVER: rising in the central e. portion of the state, and flowing s. by e. 200 m., into Sabine Bay, where its waters, with those of the Sabine river, find their way, by Sabine Pass, into the Gulf of Mexico.

NECHO, *nē′ko*, or PHA′RAOH NE′CHO, or NE′KU: Egyptian king assigned by Rawlinson to B.C. 610–594—by Poole to B.C. 611–595. He belonged to the 26th dynasty of the kings of Egypt, and was son and successor of the real founder of this dynasty, Psammetichus or Psametik I., a monarch of great energy, who had begun a strengthening and extension of the empire of Egypt both in the s. toward Ethiopia and in the e. toward the Euphrates, where Nineveh was in decline. N. is notable in general history for building fleets on the Red Sea and the Mediterranean, and sending Phœnician seamen on voyages of discovery, one of these extending clear round Africa; and in Biblical history for inflicting defeat and death on King Josiah, of Judah, B.C. 609 (or 608). With the energy, but not the prudence of his father, he sought to extend the empire of Egypt e. to the Euphrates. It was on his first march into Assyria that he found king Josiah rash enough to oppose him, and unwillingly fought, and slew him, in the valley of Megiddo, a place which was the key to the route eastward. He advanced to the Euphrates, captured and garrisoned Carchemish, and on his return deposed Jehoahaz, King of Judah, and put Eliakim or Jehoiakim in his place, as a vassal of Egypt. There is some reason to suppose that he took Jerusalem at this time. Three years later Nabopolassar, King of Babylon, sent an army under his son Nebuchadnezzar to attack and recover Carchemish, and on Necho's marching to meet this attack, he was defeated, and lost all the Asiatic part of his empire.

NECK, n. *nĕk* [AS. *hnecca*, the back of the head: Dan. *nakke*, nape of the neck: Icel. *hnacki;* Norw. *nakkje*, the back of the head: Dut. *nek*, the nape, the neck (see NAPE)]: the part of an animal between the head and the trunk; a narrow tract of land connecting two larger portions together; the long slender part of anything, as of a bottle; in *mil.*, the interior opening of an embrasure. NECKED, a. *nĕkt*, having a neck—used only in composition, as *stiff-necked*. NECK-BAND, the collar of a shirt. NECKCLOTH, a cravat; something worn round the neck by men. STIFF-NECKED, obdurate; obstinate. NECKERCHIEF, n. *nĕk′kẽr-chĭf*, a kerchief or cloth for the neck. NECKLACE, n. *nĕk′lās*, a string of beads, or some other ornament, worn round the neck. NECK′LACED, a. *-lāst*, adorned as with a necklace. NECK-MOLDING, molding at the junction of the capital and shaft of a column. The plain space between the astragal of the shaft and the moldings of the cap of the Roman Doric order is called the *neck*. NECKTIE, a small cravat for the neck. ON THE NECK, in *OE.*, immediately after; following another closely. TO HARDEN THE NECK, to grow obstinate. NECK AND CROP, completely; utterly. TO BREAK

THE NECK OF, to destroy the main force or power of; to reduce to an almost powerless condition. NECK OR NOTHING, with the risk of everything. NECK-VERSE, the verse anciently required to be read by a criminal to entitle him to benefit of clergy, said to be the beginning of the 51st Psalm.

NECKAR, *nĕk'ĕr:* one of the largest tributaries of the Rhine, and principal river of Würtemberg. It rises near the source of the Danube, on the e. declivity of the Black Forest, close to the village of Schweningen. It has a winding course of 240 m. first n.e. to its junction with the Fils, then n. to its junction with the Jaxt, finally n.w. to Mannheim, where it joins the Rhine. The principal places on its banks are Tübingen, Heilbronn, Heidelberg, and Mannheim. Its course, leading first through a deep and narrow dale, leads afterward through a succession of wide and fertile tracts, inclosed by soft, vine-clad hills. The scenery of its banks is, in general, very beautiful, and in many places highly romantic. From Cannstadt, about midway in its course, the N. is navigable; steamers ply regularly to Heidelberg. Good wines are grown on its banks. Chief affluents, on the left, the Enz; on the right, the Fils, the Rems, the Kocher, and the Jaxt.

NECKER, *nĕk'ĕr*, F. *nā-kär'*, JACQUES: financier and minister of France: 1732, Sep. 30—1804, Apr. 9; b. at Geneva, where his father, native of Brandenburg, but of Anglo-Irish descent, was prof. of German law. N. became a banker in Paris, and acquired a large fortune during the Seven Years' War. After retiring from business, he became the representative of his native city at the French court; and acquired a high though not exactly a solid reputation by his publications on political economy and finance, particularly his *Essai sur la Législation et le Commerce de Grains* (Par. 1775). In this essay he appears as the opponent of the wise Turgot's liberal measures in regard to the traffic in grain, and claims for the state the right of fixing its price, and, if it thinks it necessary, of prohibiting its exportation. On the removal of Turgot from office, 1776, June. N. was called to assist in financial affairs, and after the brief administration of Clugny, he was made general director of finances 1777, June N. could not conceal his elation: this was his weak poin' He had all the vanity, egotism, and love of show that marked his brilliant daughter, the famous Baronne de Staël-Holstein (q.v.). Nevertheless, he succeeded not only in meeting the exigencies of the war in which France was involved on the side of the American colonies, but in restoring to some degree of order the general financial affairs of the country, though mainly by the perilous expedient of borrowing, which he was enabled to do to an almost unlimited extent, owing to the confidence reposed in his financial dexterity. Some years he borrowed as much as 490 millions of francs. His Protestantism, however, and some retrenchments which he made

in the royal household with his publication on the financial affairs of France (*Compte Rendu*, which produced an immense sensation), made him an object of great dislike to the queen Marie Antoinette and court, and 1781, May 12, he was suddenly dismissed. He retired to Geneva, where he was visited, from motives of sympathy and respect, by the highest personages in the realm, the Prince of Condé, the Dukes of Orleans and Chartres, the Prince of Beauvau, the Duke of Luxembourg, Maréchal de Richelieu, the Abp. of Paris, etc., but returned to Paris 1787, from which he was soon banished on account of an attack which he published on the financial management of the reckless and ignorant Calonne. In the financial and political crisis, however, which followed on the financial administration of Loménie de Brienne, Louis XVI. found himself under the necessity of calling N. 1788, Nov., to the office of comptroller general of finances and minister of state. N. recommended the calling of the states-general, and thereby acquired the greatest popularity. He failed, however, in the difficulties which ensued, having no capacity for political affairs in other than their mere financial aspects. When the court, 1789, June 23, determined on nullifying the resolution of the third estate, N. hesitated, and the king therefore dismissed him July 11, and required him to leave the French dominions immediately. He obeyed, but the disturbances of July 12–14 (on the last of which days the Bastile was taken) were the result of his dismissal, and the king was under the necessity of recalling him. He now allied himself with Mounier and other ministers for the introduction of a constitution like that of Britain, with two chambers or houses of parliament; but this caused a great diminution of his popularity, and he was unable to contend in debate with Mirabeau and other great leaders of the national assembly. On the rejection by the assembly of his scheme of a loan, and the adoption instead of it of Mirabeau's scheme of assignats, he resigned his office 1790, Sep., and retired to his estate of Coppet, near Geneva, where he occupied his remaining years with literature. Besides the works above mentioned, he published several on political and on religious subjects, particularly a work on the French Revolution (4 vols. Par. 1796), frequently reprinted.

NECROGENOUS, a. *nĕk-rŏj′ĕ-nŭs* [Gr. *nekros*, dead; *gennăō*, I produce]: applied to cryptogamous parasitic plants which grow upon sickly and dead plants, and accelerate their death.

NECROLITE, n. *nĕk′rō-līt* [Gr. *nekros*, dead; *lithos*, a stone]: a term applied to certain nodules in limestone strata which, when struck, exhale a fetid odor like that of putrid flesh. NECRONITE, n. *nĕk′rō-nīt*, a variety of felspar which, when struck, gives off a fetid odor.

NECROLOGY, n. *nĕk-rŏl′ŏ-jĭ* [Gr. *nekros*, dead; *logos*, a discourse]: a register of deaths. NECROLOGICAL, a. *nĕk′-rŏ-lŏj′ĭ-kăl*, pert. to a register of the dead. NECROLOGIST, n. *nĕ-krŏl′ŏ-jĭst*, one who gives an account of deaths.

NECROMANCY, n. *nĕk'rō-măn-sĭ* [OF. *nigromance*, conjuring, the black art—from mid. L. *nigromantĭă*—from Gr. *nekros*, dead; *manteia*, divination]: divination by the agency of the spirits of the dead, or by devils, who are conjured up to be questioned regarding the future or other secret things; enchantment. NEC'ROMANCER, n. *-sẽr*, one who practices the art; one who raises the dead; a conjurer; a sorcerer. NEC'ROMAN'TIC, a. *-tĭk*, pert. to or performed by necromancy. NEC'ROMAN'TICALLY, ad. *-lĭ*.—*Necromancy*—which was called the *black art*, owing to the confusion of its origin with L. *niger*, black—originated in the east, in the most remote antiquity. It is condemned in the Old Testament; and the story of the witch of Endor affords a remarkable illustration of it, which has perplexed some interpreters of Scripture. The 11th book of Homer's *Odyssey* bears the title Νεκρομαντεια, and in it the shade of Tiresias is represented as brought up and consulted by Ulysses. In most parts of Greece, necromancy was practiced by priests or consecrated persons in the temples; in Thessaly, it was the profession of a distinct class of persons called Psychagogoi ('Evokers of Spirits'). The practice of it in that country was ultimately connected with many horrid rites, in which human blood, half-burned portions of bodies from funeral piles, the immature fetus cut out of the womb, etc., were employed, and sometimes human beings were slain, that their spirits might be consulted ere they finally passed into the lower world. The establishment of Christianity under Constantine caused necromancy to be placed under the ban of the church. There are evident traces of necromancy in some of the older Norse and Teutonic poems. The mediæval belief in the evocation of spirits belongs rather to sorcery than to necromancy. See SPIRITISM. See Peucer's *Commentarius de Præcipuis Divinationum Generibus* (Zerbst, 1591).

NE'CROPHAGA, n. *nĕ-krŏf'a-ga* [prefix *necro-*; Gr. *phagein*, to eat]: in *entom.*, name adopted by many modern entomologists for Latreille's Clavicornes. It contains a number of families, which have scarcely anything in common, except the practice of feeding on decaying animal or vegetable matter.

NECROPHAGOUS, a. *nĕ-krŏf'ă-gŭs* [Gr. *nekros*, dead; *phagein*, to eat]: feeding on the dead; carrion-eating.

NECROPHILISM, *nĕ-krŏf'il-ĭzm*: unnatural and revolting liking or appetite for the dead which has manifested itself in various ways. Consorting or living with the dead has been observed as a characteristic of melancholia. Individuals have inhabited graveyards, preferring the proximity and association of corpses with which they had no tie, to the cheerfulness and comforts of home; and there is recorded one notorious case, in which a gentleman, though on bad terms with his wife while alive, carried her body with him through India, scandalizing the natives, and outraging the feelings of all, by placing the coffin under his bed. This hideous tendency

may enter into certain developments of cannibalism where the feast is celebrated in memory of a departed friend, rather than in triumph over a slain foe. It is affirmed that there were anthropophagous epidemics in 1436 and 1500; and the history of vampirism connects that delusion with the moral perversion now described. Patients in asylums, especially in continental Europe, are still encountered who bemoan the crime of having devoured the dead, and violated charnel-houses. Instances of N. almost incredible are on record even in civilized countries, though confined to communities living in remote places, rude and unenlightened, and cherishing the superstitions of ages and states of society with which they have no other connection, and of which they have almost lost the recollection.—*Annales Medico-Psychologiques*, t. viii. 472.

NECROPOLIS, n. *nĕ-krŏp′ŏ-lĭs* [Gr. *nekros*, dead; *polis*, a city]: term applied to the cemeteries in the vicinity of ancient cities. It occurs in classical antiquity only as applied to a suburb of Alexandria, lying w. of that city, having many shops and gardens and places suitable for the reception of the dead. The corpses were received and embalmed in it. Here Cleopatra, the last of the Ptolemies, applied the asp to her breast, to avoid the ignominy of being led in triumph by Augustus. The site of the N. of ancient Alexandria seems to have been where are now the catacombs, consisting of galleries and tombs hollowed out of the soft calcareous stone of which the city is built, and lying at the extremity of the city. The term N. is now, however, used in a much more extended sense, and applied to all the cemeteries of the ancient world. These consisted either of tombs, constructed in the shape of houses and temples, and arranged in streets, like a city of the dead; or else of chambers hollowed in the rock, and ornamented with façades, to imitate houses and temples. Such cemeteries are to be distinguished from the *columbaria*, or subterraneous chambers of the Romans, in which their urns were deposited; or the rows of tombs along the Via Appia; or the cemeteries of the Christians, whose bodies were deposited in the ground. The most remarkable necropolises are that of Thebes in Egypt, at a place called Gournah, on the left bank of the Nile, capable of holding 3,000 persons, and which it is calculated must have contained at least 5,000 mummies; those of El-Kab or Eileithyia; of Beni-Hassan, or the Speos Artemidos; and of Madfun or Abydos; of Siwah or the Oasis of Ammon: see OASIS. In Africa, the N. of Cyrene is extensive; and those of Vulci, Corneto, Tarquinii, and Capua are distinguished for their painted tombs (see TOMB), and the numerous vases and other objects of ancient art which have been exhumed from them. Large necropolises have been found also in **Lycia, Sicily,** and elsewhere—See BURIAL.

Strabo, xviii. 795–799; Plutarch. vit Anton; Letronne *Journal des Savans* (1828), 183; Dennis, *Cities and Cemeteries of Etruria*, i. 412, & 276–358.

NECROPSY, n. *nĕk'rŏp-sĭ* [Gr. *nekros*, dead; *opsis*, sight]: the examination of a dead body.

NECROSCOPIC, a. *nĕk'rō-skŏp'ĭk* [Gr. *nekros*, dead; *skopĕō*, I view]: relating to post-mortem examinations.

NECROSIS, n. *nĕ-krō'sĭs* [Gr. *nekrōsis*, a killing, deadness]: mortification and death of a bone; a state analogous to mortification or gangrene in soft parts; also a disease of plants marked by small black spots, and followed by decay. The term is often restricted to the cases in which a portion of the shaft of a long bone dies, either directly from injury or from violent inflammation, and is inclosed by a layer of new bone; the death of a thin superficial layer, which is not inclosed in a shell of new bone, is usually termed *exfoliation*.

The bones of the lower extremity—the femur and tibia—are those most frequently affected by necrosis; though in persons engaged in making lucifer-matches the lower jaw is very often affected by it, the disease being set up by the pernicious action of the vapor of phosphorus. The dead bone, known as the *sequestrum*, generally consists of the circumference of the shaft only, and not of the interior, and the inside of the dead portion presents a rough appearance, as if worm-eaten. If the membrane investing the bone (the periosteum) remain healthy, it deposits lymph, which speedily ossifies, forming a shell of healthy bone, which completely invests the dead portion. The essential point in the treatment is the removal of the *sequestrum*.

NECTAR, n. *nĕk'tėr* [L. *nectar*—from Gr. *nektar*, the drink of the gods: F. *nectar*]: in *anc. myth.*, the name given by Homer, Hesiod, Pindar, and the Greek poets generally, and by the Romans, to the beverage of the gods, as *Ambrosia* (q.v.) was said to be their food: but Sappho and Alcman make nectar the food of the gods, and ambrosia their drink. Homer describes nectar as resembling red wine, and represents its continued use as causing immortality. By the later poets, nectar and ambrosia are represented as of most delicious odor; and sprinkling with nectar, or anointing with ambrosia, is spoken of as conferring perpetual youth, and they are assumed as the symbols of everything most delightful to the taste. Hence, in modern usage the sweet secretion of flowers; any sweet and very pleasant drink. NEC'TARED, a. *-tėrd*, imbued or mingled with nectar. NECTA'REAL, a. *-tā'rĕ-ăl*. NECTA'REAN, or NECTA'REOUS, a. *-tā'rĕ-ŭs*, pertaining to or containing nectar; sweet as nectar; delicious. NECTA'REOUSLY, ad. *-lĭ*. NECTA'REOUSNESS, n. *-nĕs*, the quality of being nectareous. NECTA'REAL, a. *-rĕ-ăl*, pertaining to the nectary of a flower. NECTARIFEROUS, a. *nĕk'tėr-ĭf'ėr-ŭs* [L. *fero*, I produce], producing nectar or honey: having a honey-like secretion. NECTARY, n. *nĕk'tėr-ĭ*, any abnormal part of a flower; properly, in *botany*, an organ in the flowers of many phanerogamous

plants, devoted either to the secretion or the reception of honey. Of the former kind are nectariferous glands, scales, and pores; of the latter, tubes, cavities, etc. But the term was for a long time very vaguely employed by botanists, and seemed to be used for any part of a flower which had no other name. Thus among the parts formerly called nectaries, are those now called *Disk* (q.v.) and *Corona* (q.v.). NEC'TARINE, n. *-ĭn*, a variety of peach having a smooth rind (see PEACH): ADJ. sweet as nectar. NECTA'RIUM, n. *-rĭ-ŭm*, the nectary. NEC'TAROUS, a. *-tėr-ŭs*, sweet as nectar.

NECTO-CALYX, n. *nĕk'tō-kā'lĭks* [Gr. *nēktŏs*, swimming; *kalux*, cup]: the swimming bell or disk of a Medusa or jelly-fish.

NEDJED, *nĕd'jĕd*, or NEJD, *nĕj'd:* the central highlands of Arabia (q.v.).

NÉE, *nā* [F. *née*—from L. *nata*, born]: born—a term often placed before a married woman's maiden name in order to designate the family name to which she belongs, as Madame de Staël, *née* Necker—that is, born Necker, or her family name was Necker.

NEED, n. *nēd* [AS. *nead*, necessity: Dut. *nood;* Ger. *noth*, need, want: Icel. *nauth;* Goth. *nauths*, need: Russ. *nudit'*, to constrain]: want; occasion for something; necessity; pressing difficulty: V. to want; to require; to have necessity for; in the third pers. sing. pres., *need* is employed as an auxiliary, and drops the usual terminating *s*, as *he need not come*. NEED'ING, imp. NEED'ED, pp. NEED'ER, n. *-ėr*, one who needs or wants. NEED'FUL, a. *-fûl*, necessary; requisite. NEED'FULLY, ad. *-lĭ*. NEED'FULNESS, n. *-nĕs*, the state or quality of being needful. NEEDS, ad. *nēdz*, necessarily; indispensably, used with *must* and *will*. NEEDLESS, a. *nēd'lĕs*, unnecessary; not needed. NEED'LESSLY, ad. *-lĭ*. NEED'LESSNESS, n. *-nĕs*, the quality of being needless. NEEDY, a. *nēd'ĭ*, very poor; distressed by want of the means of living. NEED'ILY, ad. *-ĭ-lĭ*. NEED'INESS, n. *-nĕs*, the state of being needy; want; poverty. MUST NEEDS, must of necessity. WILL NEEDS, will of necessity; will by determination. NEED'MENT, n. in *OE.*, something necessary.—SYN. of 'need n.': lack; exigency; emergency; extremity; strait; indigence; penury; poverty; destitution; distress.

NEEDFIRE [Ger. *nothfeuer;* allied to Sw. *gnida*, to rub; Eng. *knead*]: fire obtained by the friction of wood upon wood, or the friction of a rope on a stake of wood, to which a widespread superstition assigns peculiar virtues. With varieties of detail, the practice of raising needfire in cases of calamity, particularly of disease among cattle, has been found among most nations of the Indo-European race. It has been supposed effectual to defeat the sorcery to which the disease is assigned. When the incantation is taking place, all the fires in the neighborhood must be extinguished, and they all have to be

relighted from the sacred spark. In various parts of the Scottish Highlands, the raising of needfire was practiced not long ago, and it is perhaps still resorted to in some very remote localities. The sacrifice of a heifer was thought necessary to insure its efficiency. The ways of obtaining fire from wood have been various; one is by an apparatus which has been called the 'fire-churn,' a cylinder turning on a pivot, and furnished with spokes, by means of which it is made to revolve very rapidly, and fire is generated by the friction. Fire struck from metal has been supposed not to possess the same virtue, and in some instances the persons who performed the ceremony were required to divest themselves of any metal which might be about them. In its origin, the fire-churn was considered a model of the apparatus by which the fires of heaven were daily rekindled. It is still in daily use in the temples of the Hindus. The same superstition was doubtless the origin of the story of *Prometheus* (q.v.). See Grimm's *Deutsche Mythologie;* Supplement to Jamieson's *Scottish Dictionary.*

NEEDHAM, *nēd'ham:* town, Norfolk co., Mass.; 11 m. s.w. of Boston, on the New York & New England railroad (Woonsocket division). The southern boundary is formed by the Charles river. It has churches and good schools. Its manufactures include hosiery, paper, and glue. Many persons doing business in Boston have their homes in Needham. It formerly included the present town of Wellesley, which accounts for its diminished population since 1880. Pop. (1910) 5,026.

NEEDHAM, Charles Willis, ll.d.: American college president: b. Castile, N. Y., 1848, Sep. 30. He was graduated from the Albany Law School and in 1874-90 practiced law in Chicago, where he assisted in founding the University of Chicago. In 1890 he removed to Washington, where he has established a law practice and since 1897 has been connected with Columbian University (now the George Washington University), of which he became president in 1902.

NEEDHAM, James George, ph.d.: American entomologist: b. Virginia, Ill., 1868, Mar. 18. He was graduated in 1891 from Knox College, Galesburg, Ill., and from Johns Hopkins in 1893. He was professor of biology at Lake Forest University 1898-1907 and has had charge of the New York Entomological Field Station since its establishment in 1899. He has written *Elementary Lessons in Geology* (1895); *Outdoor Studies* (1898); etc.

NEEDHAM, John Turberville: English naturalist: b. London, England, 1713, Sep. 10; d. Brussels, Belgium, 1781, Dec. 30. He was a Roman Catholic priest and was in his later years director of the Academy of Sciences at Brussels. He published: *New Microscopical Discoveries* (1745); *Idée sommaire, ou Vue Générale du Système physique et métaphysique sur la Génération* (1780); etc.

NEEDLE, n. *nē′dl* [Goth. *nethla;* O. H.G. *nadala;* Dut. *naelde;* Icel. *nál*, a needle; Dut. *naeden;* Ger. *nähen*, to sew; W. *noden*, a thread; Gael. *snathad*, a needle; *snath*, thread]: a small steel instrument, pointed at one end, and having an eye or hole at the other, used in sewing (see NEEDLES): the artificial magnet of the compass: anything needle-shaped. NEEDLES, n. plu. *nē′dlz*, term applied to detached masses of rock standing out from cliffs or shores, e.g., The Needles, cluster of five islet rocks (only three now remaining) off the w. point of the Isle of Wight, of pyramidal shape and chalky formation with strata of black flint interspersed throughout; caused probably by attrition of the waves. The loftiest one, 120 ft. high, fell into the sea 1764. On the outmost Needle is a light-house. NEE′DLEFUL, n. *-fûl*, a thread of the length ordinarily used in sewing. NEEDLER, n. *nēd′lėr*, a needle-maker. NEEDLE-POINTED, as pointed as a needle. NEEDLE-WOMAN, a woman who earns a livelihood by sewing. NEEDLE-WORK, work done with the needle. NEEDLE-BOOK, a book having leaves for preserving needles. NEEDLE-FISH, the pipe-fish. NEEDLE-ORE, a variety of sulphuret of bismuth found in long, thin, steel-gray crystals. NEEDLE-STONE, a mineral of the zeolite family. NEEDLE-GUN, a gun fired by means of a needle forced forward by a spiral spring upon a detonating composition contained in a part of the cartridge: see BREECH-LOADING GUNS.

NEE′DLES: instruments of metal, or other material, for carrying the thread in sewing, embroidery, knitting, netting, and similar operations. N. are generally of metal; but bone, ivory, and wood also are used; for ordinary needle-work, called sewing, they are of fine steel; for other kinds of work, they are often much larger and differently formed as may be required.

Needle-making is an important branch of industrial art, and it has of late years attained to extraordinary perfection. Small bars of steel not thicker than a good-sized bristle, can be made perfectly round, pointed at one end with wonderful accuracy, pierced at the other end with an oval hole, the sides of which are so smoothly rounded that there is no friction upon the thread, and the whole of each instrument, not more than an inch

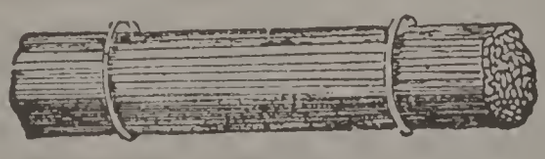
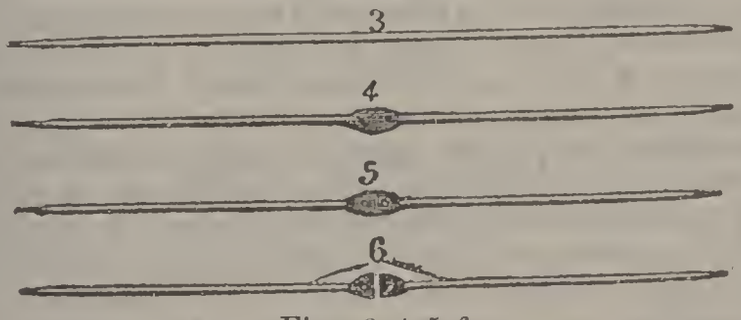


Fig. 1.

in length, beautifully polished, and sold at an exceedingly low price, notwithstanding that a large part of the operations required in their manufacture are manual. The first operation, after the wire has been selected, and its thickness accurately gauged, is to cut it

into eight-ft. lengths; this is done by winding it in a coil of 16 ft. circumference, and then cutting this coil into exact halves with powerful cutting shears. The coiling of the wire is so managed, that there are 100 pieces in each half when cut; the bundles of 100 wires are again cut into the necessary lengths for two needles; and so well arranged are the cutting shears, that a man can easily cut enough for 1,000,000 needles in a day of 12 hours. The pieces cut from a coil, though now reduced to the length of two small needles, are nevertheless somewhat curved; they are therefore collected into bundles of about 6,000, and placed within two iron rings, which hold them loosely together, as in fig. 1; they are then slightly softened by firing, and are laid on an iron plate or bench, and are pressed with a small curved bar in two or three positions, by which the operator manages to make them all perfectly straight. They are now taken to the grinder, who sits in front of his grindstone upon a seat which is hollow, and forms an air-shaft open toward the stone; through this a blast of air is forced when the wheel is in motion, which carries away from the grinder every particle of the subtle dust from the needle points and the stone. Before this humane invention, which has rendered the operation quite innocuous, the loss of life in this manufacture was more serious than in any other industrial occupation. The operator, with great tact, holds about 25 of the wires, by means of his thumb, pressed against the inside of his fingers, the wires, which are held straight and applied to the grindstone, being dexterously turned round on the inside of the hand by means of the thumb, until they are ground sharp at one end; they are then reversed, and the other ends are similarly sharpened (fig. 3). They are next taken to the *impressing* machine, which in principle consists of a weight hanging to a block, which is raised by the hand and let fall at pleasure; the wires are placed



Figs. 3, 4, 5, 6.

in succession under this, so that the falling weight strikes each wire exactly in the middle, and there flattens it, as in fig. 4. The hardening of the flattened part by the blow is removed in the annealing oven, and the holes are next punched, two in each flattened portion, as in fig. 5. These are either done by hand-punches worked by children, who acquire great nicety in the operation, or by a machine on the same principle as the *impressing* machine; this not only punches the two holes, but also

forms a small cross-cut between them (as seen in fig. 5), which is otherwise made by a file. At this cross-cut the wire is broken in two, and may now be regarded as two rudely-formed needles (fig. 6), each having a flattened and pierced head, as shown in fig. 7. A number of these are now threaded (*spitted*) on a thin wire, as in fig. 8, and

Fig. 7.

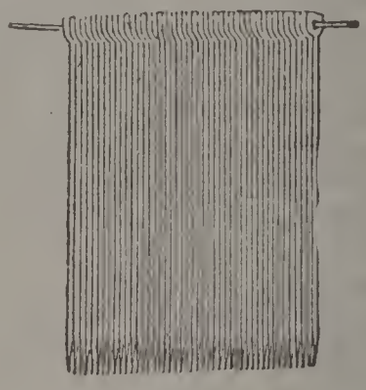


Fig. 8.

are placed in a vice, which holds them firm and straight, so that the workman can file the heads on the top and sides, so as to remove all the burred edge outside the dotted lines in fig. 7. The next process is *oil tempering*, for which they are made hot, and immersed in sufficient oil to coat them thoroughly; the oil is then burned off, an operation which renders the needles brittle. They are then weighed out into lots of about 500,000 each, and after being shaken so that they lie side by side, they are laid on a square piece of strong canvas, and a quantity of sand

Fig. 9.

and emery-powder being mixed with them, they are corded up very securely into a long roll (fig. 9), 18 to 24 inches in length. A number of these rolls or bundles are placed on a movable wooden slab, in the *scouring machine*, and over them is placed another heavily weighted slab. The action of the machine, of which these slabs form part, is to move them forward and backward in opposite directions, the bundles of needles acting as rollers, the pressure upon which works the inclosed needles, sand, etc., together, so that after eight to ten hours, which this operation occupies, instead of the blackened appearance they had when it began, they are white and silvery-looking. They are now removed to an exactly similar machine, where they are polished. Here they are separated from the sand and emery, and are removed to other canvas squares; and when mixed up with a paste of *putty-powder* and oil, are again corded up, and made to roll forward and backward under the weighted wooden slab of the *polishing machine* for four hours more. The

next process is to remove them from the canvas, and agitate them in a vessel with soft-soap and water, to remove the oil and putty-powder, and next to dry them in ash-wood sawdust. They are now highly polished and well tempered, but not all of exactly the same length, nor are the eyes perfect; they are therefore passed to a person who, by nice management of a small gauge, sorts them very quickly into certain lengths (*evening*), and arranges them all in one direction (*heading*). They then pass on to be drilled, an operation requiring great nicety, as the small oval holes have to be so polished all round, as not to cause any friction on the thread in sewing with them; a clever workman will drill and polish the holes of 70,000 needles per week. The needle is now practically finished, though many minor operations are considered necessary to high-finish. This little instrument, which costs so much labor for its formation, has by these operations acquired immense value. The wire of which the ordinary-sized needles are made is so thin, that 5½ pounds go to form 74,000 needles. Of ordinarily sized needles, 2¼ millions weigh 3 cwt., and are worth rather more than $1,000, though the steel wire of which they were made was worth only about $70 at the commencement of the manufacture. English-made needles have the highest repute, and are made chiefly in Redditch and other parts of the county of Worcester.

NEEDLESS, NEEDY, etc.: see under NEED.

NEEL, n. *nēl:* OE. spelling of NEEDLE.

NEEM′-TREE: see MELIACEÆ.

NEEMUCH, *nē-mŭch′*, or NIMACH: town of India, territory of Gwalior (q.v.), near the n.w. border of Malwa, 320 m. s.w. from Delhi, on a slightly elevated ridge rising from a well-cultivated plain. It is 1,476 ft. above the sea. A British cantonment was established here 1817. Prior to the Sepoy mutiny of 1857–59, the officers' quarters comprised about 80 bungalows, beautifully situated among gardens; but all, except a single bungalow, were destroyed, 1857, by the mutineers, who massacred the Europeans, and held the fort till it was captured by Brigadier Stuart after a siege of 14 days. The situation of N. is regarded as one of the most healthful in India; the climate is agreeable, the nights cool even in the hot season, the winter seldom so cold as to make fires requisite, and frost very rare.—Native pop. about 4,000.

NEENAH, *nē'na:* city, Winnebago co., Wis.; a railroad centre, five m. s. of Appleton, 13 m. n. of Oshkosh; and is a popular summer resort. It is separated from Menasha by Fox river, which furnishes abundant water-power, available because of the rapid current, in winter as well as summer. It has several churches, a high school, newspapers, banking facilities, and several hotels. There are mineral springs and a beautiful public park. Steamers connect N. with Fond du Lac, 30 m. below. The manufactures include flour, woolen goods, paper, pails, staves, sash and blinds. Pop. (1880) 4,202; (1885) 4,910; (1890) 5,083; (1900) 5,954; (1910) 5,734.

NE'ER, ad. *nār:* contr. of NEVER, which see.

NEERWINDEN, *nār'vĭn-dĕn*, a small village of Belgium, in the northwest corner of the province of Liége, is celebrated in history for the great victory gained by the French under Luxembourg over the English under William III. (1693, July 29)); and also for the defeat of the French under Dumouriez by the allies under the Prince of Coburg (1793, March 18).

NEESE, v. *nēz* [Ger. *niesen;* Dut. *niezen*, to sneeze; Sw. *nysa;* O.Icel. *hnjosa*, to sneeze]: the old spelling of SNEEZE, which see. NEES'ING, imp. NEESED, pp. *nēzd.*

NEESIMA, JOSEPH HARDY, LL.D: Japanese Christian minister and educator: 1843, Feb. 15—1890, Jan. 23; b. Yeddo. From Dutch books he learned of a Creator; from Bridgman's *Hist. of the U. S.* the words 'Heavenly Father'; then in a missionary's book, a story of the Bible, he read of the creation. Desiring to know more, he went to the open port in Japan, Hakodate, and covertly reached a ship that brought him to Shanghai, China. Thence he sailed as cabin boy to Boston, in a ship that fortunately was owned by the late Alpheus Hardy—one of Boston's most benevolent men. Mr. Hardy educated him at Phillips Acad., Andover, and at Amherst Coll., where he took the degree B.S. 1870. Before ordination as a minister at Boston 1874, he was in Andover Seminary 1871-2, and while a student of theol. he was for a while interpreter of the Japanese embassy, travelling in the United States and Europe; this led to friendly aid to him in his work in Japan by leaders of the new movement there. An eloquent appeal by him at the meeting of the Am. Board of For. Miss. 1874, resulted in a gift of $4,000, with which he returned to Japan and established a Christian school at Kyota. This, with the help of gifts, including nearly $60,000 fro prominent Japanese and $100,000 from an American, grew to a university, with 900 students. Latterly, Dr. N's work, besides the entire direction of the school, was chiefly in theological teaching. He wore himself out in labors to which is largely due the great progress of Christianity in Japan.

NEEVE, or NIEVE, n. *nēv:* in *Scot.*, the closed hand: see NEIF.

NE EXEAT REGNO, *nē ĕks'ē-ăt reg'no:* title of a writ issued in England by the court of chancery to prevent an individual leaving the kingdom, unless he gives security to abide a decree of that court. The writ was originally resorted to in cases of attempts against the safety of the state, but is now issued where an equitable debt or demand is sought to be substantiated by a bill or proceeding in chancery; resembling the process known in the common-law courts as arresting and holding to bail. In the United States the title Ne Exeat Republica is applied to this writ, formerly rarely used in cases of official breach of trust, and now in most states abolished.

NEFARIOUS, a. *nĕ-fā'rĭ-ŭs* [L. *nefārius*, impious, base —from *nefas*, an unlawful action: It. *nefario*]: villainous; wicked in the extreme; abominable. NEFA'RIOUSLY, ad. *-lĭ.* NEFA'RIOUSNESS, n. *-nĕs*, the quality of being nefarious.—SYN. of 'nefarious': iniquitous; infamous; impious; atrocious; horrible; dreadful; detestable; vile.

NEFF, *nĕf*, FELIX: Swiss evangelist: 1798, Oct. 8—1829, Apr. 12; b. Geneva. He was educated by a widowed mother of remarkable intelligence and piety, with occasional instruction by Swiss pastors; and showed special taste for nat. history, mathematics, and such authors as Plutarch and Rousseau. After employment in his early years with a florist, he enlisted as a soldier to relieve his mother of his support, and by fidelity and good character soon rose to the rank of sergeant. His religious and moral strictness, however, were not in harmony with army life, and being advised to turn to religious work, he gave up his commission 1819, and undertook service as a catechist and parish missionary, spending his first years in the cantons of Geneva, Neufchâtel, Berne, and the Pays de Vaud, and going, 1821, to the needy district of Grenoble in France, and thence to Mens in Isère. Restrained by scruples of evangelical strictness from seeking ordination in the established church of Geneva, and not permitted as a foreigner to ask it of the French Prot. Church, he resorted to England, was ordained among the Congregationalists 1823, returned to Mens, and went thence into the high Alps, for the most self-sacrificing and zealous and brave devotion to the destitute descendants of the Vaudois. His parish comprised 17 villages within a circuit in the wild Alpine valleys of 80 m.; and some of those to whom he preached, organizing schools, building school-houses, teaching and visiting, were little better than barbarians. From these exhausting labors he went, worn out, to the baths of Plombières, only to go thence to Geneva to die.

NEGAPATAM, *nĕg-a-pa-tâm′*: town of Brit. India, presidency of Madras, district of Tanjore, 124 m. s.s.w. from Madras, on a small estuary of one of the many small southern mouths of the Cauvery. The manufacture of cotton and silk fabrics was, in former times, extensively carried on here, but has greatly declined in consequence of the cheapness of British goods. A chief branch of industry is the expression of oil from the cocoa-nut, and from oil-seeds. There is considerable trade with Ceylon. The harbor is suited only for small coasting-vessels; but measures are in progress for its improvement. N. is a terminus of the Great Southern railway of India. It was cap. of the Dutch possessions in India, having been taken by them from the Portuguese 1660; but was taken by the British 1781. Pop. in a joint municipality with Nagur adjoining it (1891) 59,221.

NEGATIVE, n. *nĕg′ă-tĭv* [F. *négatif*—from L. *negatīvus*; It. *negativo*, that denies, negative—from L. *nego*, I deny]: a word which denies, as *not*, *no*; a proposition by which something is denied; the right or power of withholding assent; the position taken up by a party who opposes or denies; in *photography*, a picture either on paper or glass, having the lights and shadows reversed, from which positives or ordinary photographs may be taken in unlimited numbers (see below): ADJ. implying denial; returning the answer *no* to an inquiry or request; opposed to affirmative; opposed to positive, as a *negative* morality—that is, that which merely contents itself with abstaining from evil; without positive statement; tending to prove the opposite; having the power of stopping or withholding: V. to disprove; to dismiss or reject by a vote; to refuse to enact or sanction something proposed. NEG′ATIVING, imp. NEG′ATIVED, pp. *-tĭvd*. NEGATION, n. *nĕ-gā′shŭn* [F.—L.]: denial as opposed to *affirmation*; a declaration that a certain thing is *not*, or has *not* been; argument drawn from denial. NEG′ATIVELY, ad. *-lĭ*. NEG′ATIVENESS, n. *-nĕs*, the quality of being negative. NEGATIVE ELECTRICITY, resinous electricity, or that evoked on sealing-wax by rubbing with flannel. NEGATIVE PREGNANT, the negation of one thing which implies the affirmation of another. NEGATIVE QUANTITY, in *alg.*, the quantity to be subtracted, or which is affected by the sign (—) (see NEGATIVE QUANTITIES). NEGATIVE SIGN, the sign (—) in algebra.

NEG′ATIVE, in Photography: that kind of photographic picture in which the lights and shadows of the natural object are transposed; the high lights being black, and the deep shadows transparent, or nearly so. Negatives are taken on glass and paper by various processes and should indicate with extreme delicacy, and in reverse order, the various gradations of light and shade which occur in a landscape or portrait. A N. differs from a positive inasmuch as in the positive it is required to produce a deposit of pure metallic silver to be viewed by *reflected* light; while in the N. density to *transmitted* light is the chief desideratum; accordingly inorganic re-

ducing and retarding agents are employed in the development of a positive, while those of organic origin are used in the production of a N. Adopting the collodion process (which has almost completely replaced every other) as a type of the rest, the conditions best adapted for securing a good N. are here indicated, as presenting the principles which may be applied in any process.

The possession of a good lens and camera being taken for granted, and favorable conditions of well-directed light being secured, all that is necessary is to establish a proper and harmonious relation between the collodion bath, developer, and time of exposure. A recently iodized collodion will generally be moderately neutral, in which case, if the developer be at all strong, and the weather warm, the bath should be decidedly acid, or *fogging* will be the result. Should the collodion, however, be red with free iodine, a mere trace of acid in the bath will suffice, while the development may be much prolonged, even in warm weather, without fogging. If the simple fact be borne in mind that the presence of acid, either in the bath collodion or developer, retards the reducing action of the developer, it will suffice to guide the operator in many difficulties. The value of a N. consists in the power it gives of multiplying positive proofs. See POSITIVE PRINTING: PHOTOGRAPHY.

NEGATIVE QUANTITIES: generally defined as quantities the opposite of 'positive' or 'numerical' quantities, and forming the first and great point of difference between algebra, as a separate science, and arithmetic. In the oldest treatises on algebra they are recognized as distinct modifications of quantity, and existing apart from and independent of positive quantity. In later times, this opinion was vigorously combated by many mathematicians, among whom Vieta was prominent; but the more eminent analysts retained the old opinion. Newton and Euler distinctly assert the existence of N. Q. as quantities less than zero; and Euler supports his opinion by the well-known illustration of a man who has no property, and is $50 in debt, to whom $50 requires to be given in order that he may have nothing. After all, this discussion is little more than a verbal quibble, though interesting from the prominent position which it long held. It had its rise in the difficulty of satisfying the requirements of a constantly progressing science by the use of signs and forms retaining their original limited signification. It was soon felt that the limited interpretation must be given up; and accordingly an extension of signification was allowed to signs and modes of operation. + and —; which were formerly considered as merely symbols of the arithmetical operations of addition and subtraction, were now considered as 'general cumulative symbols, the reverse of each other,' and could signify gain and loss, upward and downward, right and left, same and opposite, to and from, etc. Applying this extended interpretation of signs to a quantity such as —4, we obtain at once a true idea of a negative quantity;

for if + 4 signifies 4 inches *above* a certain level, − 4 signifies 4 inches *below* that level, and therefore, though a positive quantity in itself (since a negative is, strictly speaking, an impossible existence), it may be fairly considered to be less than zero, as it expresses a quantity less by 4 than 0 inches above the level. Keeping this idea in view, it has been conventionally agreed to admit the existence of N. Q. as existing *per se*. The only errors which can flow from this arise from misinterpretation of results, for the four fundamental operations of addition, subtraction, multiplication, and division are unaffected by the extended interpretation of signs. The following is an illustration of the value of an extended interpretation of the negative sign, showing at the same time how much more general are the ideas conveyed by algebraic expressions than by ordinary language: If at the present time a father is 50 years, and his son 20 years old, when will the father be three times as old as his son? This problem, when solved, gives — 5 as the number of years which must elapse before the father's age is three times the son's. Now, at first sight, this result appears to be absurd, but when we consider the terms of the problem, its explanation is easy. The question asked pointed to a number of years *to come*, and had the result turned out to be *positive*, such would have been the case, and the fact of its being negative directs us to look in a 'contrary' direction, or backward to time *past;* and this is found to satisfy the problem, as 5 years 'ago' the father was 45 and his son 15.

N. Q. arise out of the use of general symbols in subtraction, as in the formula $a - b$, where we may afterward find that b is greater than a: see SUBTRACTION.

NEGAUNEE, *nĕg-aw′nē:* city, Marquette co., Mich.; a railroad centre, 176 m. n. of Green Bay city, 12 m. w. of Marquette, which is on Lake Superior. It is about 900 ft. above the level of the lake. It has a large trade with the surrounding region, but derives its principal interest from its rich iron mines, in which a large capital is invested. It has churches, educational and banking facilities, a newspaper, blast furnaces, powder mills, and a nitro-glycerine factory. Pop. (1880) 3,931; (1890) 6,078; (1900) 6,935; (1910) 8,460.

NEGLECT, v. *nĕg-lĕkt′* [L. *neglectus*, disregarded, slighted—from *nec*, nor, not; *lego*, I gather]: to omit by carelessness or design; to slight or disregard; not to heed; not to care for; not to attend to; in *OE.*, to postpone: N. omission to do anything that can be done, or that requires to be done; slight; habitual want of regard; inattention; state of being disregarded. NEGLECT′ING, imp. NEGLECT′ED, pp. NEGLECT′ER, n. *-ėr*, one who. NEGLECT′FUL, a. *-fûl*, careless; inattentive; heedless. NEGLECT′FULLY, ad. *-lĭ*, with neglect. NEGLECT′EDNESS, n. *-nĕs*, state of being neglected. NEGLECT′INGLY, a. *-lĭ*, carelessly; inattentively. NEGLECTION, n. *nĕ-glĕk′shŭn*, in *OE.*, state of being negligent.—SYN. of 'neglect, v.': to contemn; disesteem; overlook; omit.

NEGLEY, *nĕg'lĭ*, JAMES SCOTT: soldier: b. 1826, Dec. 26, East Liberty, Alleghany co., Penn. He was educated at the Western Univ. of Penn., Pittsburg; enlisted 1846 in the 1st Penn. regt., and was in most of the battles of the Mexican war; after which he became a farmer and horticulturist. At the opening of the civil war he raised a brigade for three months' service; was commissioned brig.gen. of volunteers 1861, Apr.; served with the Army of the Ohio in Tenn. and Ala.; at the battle of Lavergne, 1862, Oct. 7, his command defeated the Confederates under Forrest and Anderson; he was in the battle of Murfreesboro (Stone River), and promoted maj. gen. for gallantry 1862, Nov. 29; served in the Georgia campaign; and at Chickamauga, 1863, held Owen's Gap. After the war he settled at Pittsburg; was representative in congress 1869–75 and 1885–87 (as a republican); then settled in New York.

NEGLIGEE, n. *nĕg'lĭ-zhā'* [F. *négligé*, in undress—from *négliger*, to neglect—from L. *negligĕrĕ*, not to attend to]: a loose gown; an undress; an easy, unceremonious attire: a long necklace, especially of red coral.

NEG'LIGENCE, in Law: well defined as 'omitting to do something that a reasonable man would do, or the doing something that a reasonable man would not do;' briefly it is the failure to exercise care, according to circumstances. To maintain a cause of action for N. the party injured must show: 1, N. on the part of the person complained of; 2, injury to himself; and 3, freedom from N. on his own part. N. may arise in cases where the parties are strangers to each other, or where they occupy some special relation to each other by contract expressed or implied. Included in the first class are those cases where persons, in the use of their own property or in pursuit of their own private business, cause an injury to some third person. Each person must so use his own property and so conduct his own business as not to cause injury to third persons. Thus, if a man blasts rocks on his own property and, failing to exercise the diligence and caution necessary to such operations, causes injury to his neighbors, he renders himself liable to an action for N.; the violation of statutory and municipal regulations for the purpose of protecting persons or property from injury is of this class of cases. In the second class are those cases where a party by contract with others obligates himself to exercise a certain degree of care, and fails to do so; this obligation to exercise care may arise from the contract or may be imposed by law. In cases of this sort, the N. will be slight, ordinary, or gross, depending inversely on the amount of care to be exercised. Thus, if slight care is necessary, only gross N. amounting almost to wilfulness will render a person liable, as in the case where a person for his own benefit only deposits property with another person; if ordinary care is demanded, a person will be liable for ordinary N., as in the case where property is deposited by one person

with another for the benefit of both; where the care to be exercised is extraordinary, a person will be liable for slight N., as where a deposit of property is made for the sole benefit of the person with whom it is deposited. Ordinary N. is that want of care which a reasonably prudent and cautious man would have exercised under the circumstances of the particular case; slight N. is that lack of a still greater degree of care; gross N. is a lack of that degree of care which the depositary would exercise in the management of his own affairs. Recent decisions have questioned the value of these distinctions. There are two exceptions to these rules: 1, innkeepers; 2, common carriers. These on the grounds of public policy are absolute insurers—that is, they are liable for injury without regard to the care exercised, unless the damage is occasioned by 'the act of God' or by the public enemy. Contributory N. is conduct on the part of the injured person without which the injury would not have happened: it is a complete defense to an action. Though the injured person may actually have contributed to the injury, it will be no defense if the jury conclude that the injury would have arisen no matter how diligent the plaintiff would have been. The person injured may have either a civil remedy, in the nature of money damages, or a criminal remedy, or both. In criminal N. the question of intent is all-important; this arises mostly in cases of homicide.

There can be no N. where there is no breach of duty; if the injury complained of was inevitable, no action can be maintained; thus in cases where the injury was caused by an 'act of God,' or in cases where the person complained of did not or was not legally bound to have the power sufficient to prevent the injury, there is no negligence.

A master is responsible to the public, and under certain conditions to his servants, for the N. of his servants acting in execution of his business (see MASTER AND SERVANT); the question of N. and the care to be exercised varies according to the circumstances of each case, and is generally one of fact for the jury, but may be one of law for the judge to decide, where the case falls within a general or well-settled rule or principle.

By the common law, if death resulted from N., no action for damages could be maintained by the personal representatives of the deceased; but by a statute in England, called Lord Campbell's Act, and by similar statutes in most of the states in this country, the executor or administrator of the deceased can commence an action for damages for the benefit of the near relatives of the deceased. The amount of damages to be recovered in such an action is limited by these statutes to a certain fixed amount; in most of the United States not more than $5,000 can be recovered.

NEGLIGENT, a. *nĕg'lĭ-jĕnt* [F. *négligent*—from L. *negligens* or *negligen'tem*, reckless, that cares not for anything: It. *negligente*]: careless; heedless; habitually inattentive; not doing what ought to be done. NEG'LIGENTLY, ad. *-lĭ*. NEG'LIGENCE, n. *-jĕns* [F.—L.]: carelessness; the habit of omitting to do things which ought to be done; omission of duty: in *law* (see above).—SYN. of 'negligent': inattentive; thoughtless; remiss; neglectful; regardless; indifferent; slighting.

NEGOTIABLE PAPER: either promissory notes or bills of exchange, payable to the bearer or order. These are evidences of debt or money due and may be transferred to a third party by endorsement or delivery. The third party may sue for the amount in his own name. A sealed paper, unless issued by a corporation or state, is not usually deemed negotiable. The demand for payment of paper thus negotiated must be made when the note falls due, or to use the common phrase, at its maturity. But this is not at the expiration of the time when the note is made payable on the face of it. The law adds three whole days, which are called days of grace. At first, these were, as the name intimates, days of favor or mere indulgence; but usage, and now law, has converted them into an absolute right. In most of the states, statutes provide that all negotiable paper, not payable at sight or on demand, is entitled to three days of grace, unless it be expressly agreed otherwise. This is sometimes done, but not often; and the words used for this purpose are, simply, 'without grace.' One distinction is important. These days retain so much of their original character of mere indulgence, that if the last day of grace falls on Sunday, or on any holiday on which payment cannot be demanded, it is now due, and demand must be made, on the Saturday or other day preceding. But if paper without grace, or any payment not entitled to grace, falls due on Sunday, or any other legal holiday, the payer now gains a day, because payment cannot be demanded until Monday, or the day after the holiday.

NEGOTIATE, v. *nĕ-gō'shĭ-āt* [L. *negotĭātus*, transacted business—from L. *negōtĭum*, business, employment, anything to be done—from *nec*, not; *otĭum*, ease, leisure: Sp. *negociar:* F. *négocier*]: to transact or arrange business; to bargain; to treat with others in regard to public affairs or private matters; to pass or transfer, as a bill of exchange. NEGO'TIATING, imp. NEGO'TIATED, pp. NEGO'TIABLE, a. *-shĭ-ă-bl*, capable of being negotiated; that may be passed or transferred to another. NEGO'TIABIL'ITY, n. *-bĭl'ĭ-tĭ*, the quality of being negotiable or transferable. NEGO'TIA'TION, n. *-shĭ-ā'shŭn* [F. *négociation*—from L. *negotiatio*]: the act of negotiating; the treating with another in regard to sale or purchase; the transaction of business between states or nations. NEGO'TIATOR, n. *-ā-tẽr*, one who negotiates or treats with others.

NEGRITOS, *nĕ-grī'tōs*, or NEGRILLOS, *nĕ-grĭl'lōs* [Sp. diminutive of negroes]: name given by the Spaniards to certain negro-like tribes inhabiting the interior of some of the Philippine Islands, and differing essentially both in features and in manners from the Malay inhabitants of the Eastern Archipelago. They bear a very strong resemblance to the negroes of Guinea, but are much smaller in size, averaging in height not more than four ft. eight inches, whence their appellation of N., or little negroes. They are also called by the Spaniards *Negritos del Monte*, from their inhabiting the mountainous districts for the most part; and one of the islands where they are most numerous bears the name of *Isla de los Negros*. These N. are known also by the names Aeta, Aigta, Ite, Inapta, and Igolote or Igorote. They are described as a short, small, but well-made and active people, the lower part of the face projecting like that of the African negroes, the hair either woolly or frizzled, and the complexion exceedingly dark, if not quite so black as that of the negroes. The Spaniards describe them as less black and less ugly than the negroes—*Menos negros y menos feos*. All writers concur in speaking of them as sunk in the lowest depths of savagedom, wandering in the woods and mountains, without any fixed dwellings, and with only a strip of bark to cover their nakedness. Their only weapons are the bow and arrow; and they live on roots, wild fruits, and any sort of animals that they can surprise in their haunts, or conquer in the chase. By the Malays, they are despised and hated; and the buffalo-hunters in the woods, when they meet with them, do not scruple to shoot them down like wild beasts or game. 'It has not come to my knowledge,' says a Spanish writer, 'that a family of these negroes ever took up their abode in a village. If the Mohammedan inhabitants make slaves of them, they will rather submit to be beaten to death than undergo any bodily fatigue; and it is impossible, either by force or persuasion, to bring them to labor.' The same writer, an ecclesiastic, speaks of them as gentle and inoffensive in their manners, whenever he himself came in contact with them; and, though informed that some of them were cannibals, he was not inclined to believe the report. Dr. Carl Scherzer, historian of the circumnavigation of the *Novara*, when at Manila, had an opportunity of seeing a negrita girl, whom he thus describes: 'This was a girl of about 12 or 14 years of age, of dwarf-like figure, with woolly hair, broad nostrils, but without the dark skin and wide everted lips which characterize the negro type—a pleasing-looking, symmetrically-formed girl.'

According to Spanish statements, the N. are found in only five of the Philippine Islands—Luzon, Mindoro, Panay, Negros, and Mindanão—and are estimated at about 25,000 souls. Remnants of them exist, however, in the interior of some of the other islands in the Eastern Archipelago; and they are scattered, also, though in small numbers, through certain islands of Polynesia.

They are altogether an island people, and are hence treated of by Prichard under the designation of Pelagian negroes. By Dr. Pickering they are treated of as a distinct race, resembling the Papuan, but differing from it in the diminutive stature, the general absence of a beard, the projecting of the lower part of the face or the inclined profile, and the exaggerated negro features. The hair, also, is more woolly than that of the Papuans. Latham classed them under *Oceanic Mongolidæ*. Müller (1873) makes them Papuans; Peschel (1875), 'Asiatic Papuans;' while A. R. Wallace treats them as distinct from the Papuans. (See Keane's ethnological appendix to Wallace's *Australasia* (1880), and Wallace's *Malay Archipelago*.) There are numerous tribes of N. in the Philippines, who speak quite distinct and mutually unintelligible languages. Some find N. in New Guinea, New Britain, New Ireland, etc., and in Tasmania. Keane regards the Samangs, an aboriginal tribe in the peninsula of Malacca, as unmistakably negrito; and latterly the Andamanese have been referred to the same stock. Others have sought to trace a connection between the N. and the Bushmen and other dwarfish Africans on one hand, and the Ghonds and other dark aboriginal tribes of s. India on the other; and affirm that the Negrito race once occupied more space than it does at this time, and that it has in many instances preceded the dissemination of other races. We conclude with a description of a negrito native of Erromango (the island where the missionary Williams was murdered), supplied to Dr. Pickering by Horatio Hales, his associate in the United States exploring expedition. 'He was above five ft. high,' says Mr. Hales, 'slender and long limbed; he had close woolly hair and retreating arched forehead, short and scanty eyebrows and small snub nose, thick lips (especially the upper), a retreating chin, and that projection of the jaws and lower part of the face, which is one of the distinctive characteristics of the negro race. . . . Placed in a crowd of African blacks, there was nothing about him by which he could have been distinguished from the rest.' See PAPUA: POLYNESIA (*Polynesians*).

NEGRO, n. *nē′grō* [Sp. *negro*, a negro—from L. *nigrum*, black]: one of the black race of men in Africa or their descendants, distinguished by their woolly hair, flat noses, high cheek-bones, and thick protruding lips: ADJ. black. NEGRESS, n. fem. *nē′grĕs*, a female Negro. NEGRITO, n. *nĕ-grī′tō* [L. *nigritia*, black color, Negroland]: inhabitant of certain intertropical islands (see NEGRITOS, or NEGRILLOS). NEGROHEAD TOBACCO, tobacco softened with molasses and pressed into cakes, generally called Cavendish. NEGROLAND, the district of Africa occupied by the negro race.—The *Negro* denotes a considerable branch of the human family, possessing certain physical characteristics which distinguish it in marked degree from the other branches or varieties of mankind—especially the so-called whites or Europeans. In Blumenbach's fivefold division of mankind, the negroes occupy the first place under the variety *Ethiopian*, which likewise embraces the Kafirs, Hottentots, Australians, Alforians, and Oceanic negroes. In Latham's threefold division, they are placed among the *Atlantidæ*, and form the primary subdivision of *Negro Atlantidæ* in that author's classification; while in Pickering's elevenfold division, they occupy the last place in his enumeration of the races of mankind.

Both Prichard and Latham strongly protest against the common error of considering the term N. synonymous with African. 'It ought to be remembered,' says the former, 'that the word N. is not a national appellation, but denotes the ideal type constituted by the assemblage of certain physical characteristics, which is exemplified in the natives of Guinea in w. Africa, and in their descendants in America and the W. Indies.' And Latham in like manner observes: 'No fact is more necessary to be remembered, than the difference between the N. and African; a fact which is well verified by reference to the map. Here the true N. area—the area occupied by men of the black skin, thick lip, depressed nose, and woolly hair—is exceedingly small; as small in proportion to the rest of the continent, as the area of the district of the stunted Hyperboreans is in Asia, or that of the Laps in Europe. Without going so far as to maintain that a dark complexion is the exception rather than the rule in Africa, it may safely be said that the hue of the Arab, the Indian, and the Australian is the prevalent color. . . . What are the true N. districts? and what those other than N.? To the former belong the valleys of the Senegal, the Gambia, the Niger, and the intermediate rivers of the coast, parts of Sudania, and parts about Sennaar, Kordofan, and Darfúr; to the latter, the whole coast of the Mediterranean, the Desert, the whole of the Kafir and Hottentot areas s. of the line, Abyssinia, and the middle and lower Nile. This leaves but little for the typical negro.'

The N. has a black skin, unctuous and soft; woolly hair; thick lips; the lower part of the face prognathic, or projecting like a muzzle; the skull long and narrow;

and a low, retreating forehead. The skull is remarkably solid and thick, so that in fighting they often butt against each other like rams, without much damage to either combatant; and it is likewise so flat that burdens are easily carried upon it. According to Camper's lateral admeasurement, the head of the N. shows an angle of 70°, while that of the European shows one of 80°, on which difference of 10°, as he considered, depends the superior beauty of the latter. There is little reliance, however, to be placed on such a mode of admeasurement; and the same may be said of Blumenbach's vertical method. According to this, a considerable difference appears to exist between the skull of the N. and that of the European. 'But,' says Dr. Prichard, 'I have carefully examined the situation of the foramen magnum in many negro skulls; in all of them its position may be accurately described as being exactly behind the transverse line bisecting the antero-posterior diameter of the basis cranii. This is precisely the place which Owen has pointed out as the general position of the occipital hole in the human skull. In those negro skulls which have the alveolar process very protuberant, the anterior half of the line above described is lengthened in a slight degree by this circumstance. If allowance is made for it, no difference is perceptible. The difference is, in all instances, extremely slight; and it is equally perceptible in heads belonging to other races of men, if we examine crania which have prominent upper jaws. If a line is let fall from the summit of the head at right angles with the plane of the basis, the occipital foramen will be found to be situated immediately behind it; and this is precisely the case in N. and in European heads.' There is, in fact, neither in this respect—the conformation of the N. skull—nor in any other, solid ground for the opinion hazarded by some writers, and supported, either through ignorance or from interested motives, by many persons—that the N. forms a connecting link between the higher order of apes and the rest of mankind. The difference is certainly considerable between the highest European and the typical N., but the gulf between them both and the highest of the Simiæ is so nearly of the same width, that the difference is scarcely distinguishable. But the skin, hair, skull, lips, maxillary profile, and general facial appearance of the N., are not the only features that distinguish him in a great degree from the European, and seem to stamp him as a distinct variety of the human race. 'In the N.,' says Prichard, 'the bones of the leg are bent outward. Soemmering and Lawrence have observed that the tibia and fibula in the N. are more convex in front than in Europeans; the calves of the legs are very high, so as to encroach upon the hams; the feet and hands, but particularly the former, are flat; and the os calcis, instead of being arched, is continued nearly in a straight line with the other bones of the foot, which is remarkably broad.' As to the supposed excessive length of the forearm in

the N., a circumstance also adduced as showing an approach to the anthropoid apes, facts are altogether against the statement; there being no greater difference than is observable in individuals of any other variety of mankind. In stature, the N. is very much on a par with the European, often reaching six ft., and rarely declining below five and a half. There is much discussion as to the cause of the blackness of the skin in the N. It is generally supposed to depend on the greater amount of pigment cells in the *Rete Malpighii*, and in the greater number of cutaneous glands, as compared with the skin of Europeans. In the skin of the N. there is much oily matter, and he perspires profusely, which serves to keep him in health, while it diffuses a smell not agreeable to sensitive olfactory nerves. Of the hair of the N., Dr. Prichard remarks: 'I am convinced that the N. has hair properly so called, and not wool. One difference between the hair of a N. and that of a European consists in the more curled and frizzled condition of the former. This, however, is only a difference in the degree of crispation, some European hair being likewise very crisp. Another difference is the greater quantity of coloring matter or pigment in the hair of the N. It is very probable that this quality is connected with the former, and is its cause, though we cannot determine in what manner one depends upon another; but, as these properties vary simultaneously, and are in proportion one to another, we may infer that they do not depend upon independent causes.'

The Negroes, in their native seat, comprise various independent tribes, which are thus classified and enumerated by Dr. Latham: 1. *Western Negro Atlantidæ*, embracing the Woloffs, Sereres, Serawolli, Mandingos, Felups, etc., Fantis, etc.; the Ghá, the Whidah, Maha, and Benin tribes, the Grebo, etc. 2. *Central Negro Atlantidæ*, embracing the Yarriba, the Tapua, Haussa, Fulahs, Cumbri, Sungai, Kissúr, Bornú, etc.; Begharmi, Mandara, Mobba, Furians, Koldagi. 3. *Eastern Negro Atlantidæ*, embracing the Shillúk, etc.; Qámamyl, Dallas, etc.; Tibboo, Gongas. More recent classifications of the negro races and tongues separate the Fulah and Nuba groups, as well as the Bantu family, from negroes proper. See AFRICA; also Keane's appendix to *Africa* in Stanford's *Compendium of Geography*.

While these several tribes have their distinctive peculiarities, they yet bear strong general resemblance to each other, not only in physical appearance, but also in intellectual capacities, moral instincts, customs, and manners. The N. intellect has been generally considered inferior not only to the European, but to that of many primitive races not yet brought within the pale of civilization, while superior to that of the Australians, Bushmen, and Esquimaux. Some tribes are sunk in the lowest barbarism, and are either ferocious savages, or stupid, sensual, and indolent. This is the case, for the most part, according to Prichard, where the exaggerated N. type is discernible, as among the Bulloms. Pa-

pals, and other tribes on the coast of w. Guinea; also among the tribes near the Slave Coast, and in the Bight of Benin, where the slave-trade has been carried on to the greatest extent. In other parts they show capacity for practicing the arts of life. They are ingenious in the construction of their dwellings, they have some knowledge of the working of iron and other metals, they manufacture arms, dress and prepare the skins of animals, weave cloth, and fabricate numerous useful household utensils; and they are not altogether deficient in knowledge of agriculture. These marks of civilization are apparent mostly in the districts either wholly or partially converted to Mohammedanism. Mungo Park, in his account of Sego, capital of Bambarra, describes it as a city of 30,000 inhabitants, with houses of two stories high, having flat roofs, mosques in every quarter, and ferries conveying men and horses over the Niger. 'The view of this extensive city,' he says, 'the numerous canoes upon the river, the crowded population, and the cultivated state of the surrounding country, formed altogether a prospect of civilization and magnificence which I little expected to find in the bosom of Africa.' All tribes of negroes appear to be passionately fond of music, and show no little skill in the manufacture of musical instruments. They also express their hopes and fears in extemporary songs. Where Mohammedanism has not been introduced, the religion of the negroes is nothing but a debased *fetish* worship. They make fetiches of serpents, elephants' teeth, tigers' claws, and other parts of animals, at the dictation of their *fetich man*, or priest. They also manufacture idols of wood and stone, which they worship; and yet, under all this, they have some idea of a Supreme Being. They believe in good and evil spirits, and are perpetually practicing incantations to ward off the baneful influence of their spiritual enemies. Their religion, in fact, is one altogether of fear; and as this generally leads to cruelty, we find them for the most part indifferent to the sacrifice of human life. In some parts they even offer up human victims to propitiate their deities. They are cruel to their enemies and prisoners, and often shed blood for the mere savage delight that they experience in seeing it flow from their victims—e. g., in the inhuman *customs*, as they are called, of Dahomey, and the *Yam* and *Adai customs* of the Ashantees, as described by Bowdich.

The same indifference to human suffering, coupled with the passion of avarice, has doubtless been the mainspring of the slave-trade carried on during so many centuries between the negroes and European traders on the w. coast of Africa. Begun by the Portuguese as early as 1503, when N. slaves were first imported into the W. Indies, sanctioned by Ferdinand of Aragon 1511, and subsequently by Charles V., legalized in England under Elizabeth, and eventually practiced by every maritime nation of Europe, this infamous trade flourished under the sanction of law as late as the year 1807, when

it was happily abolished by act of parliament in Great Britain, and is now treated as piracy by almost every civilized nation. Even still, however, it is practiced by lawless men, notwithstanding the humane efforts of Great Britain, France, and the United States to suppress it; and the encouragement which it has given to the petty chieftains on the Slave Coast, and the country behind it, to enrich themselves at the expense of their fellow-countrymen, has contributed more than anything else to retard the progress of civilization in that part of Africa. 'The region mentioned,' says Prichard, 'has been the great seat of the exportation of N. slaves, and the tribes on the coast have been reduced to the lowest state of physical and moral degradation by the calamities and vices attendant on that traffic. Throughout Negroland, and especially this part of it, the inhabitants of one district in the interior, the dwellers on one mountain, are ever on the watch to seize the wives and children of the neighboring clans, and to sell them to strangers; many sell their own. Every recess, and almost every retired corner of the land, has been the scene of hateful rapine and slaughter, not to be excused or palliated by the spirit of warfare, but perpetrated in cold blood, and for the love of gain.'

The custom of polygamy prevails among all the N. tribes, and where these are constituted into nations or kingdoms, as in Dahomey, the sovereign has often as many as two or three thousand wives, whom he occasionally disposes of as presents to his chief officers and favorites.

The languages of the various nations and tribes of negroes are very numerous. Vocabularies of nearly 200 languages have been brought from Africa by the Rev. Dr. Koelle. 'A slight examination of these vocabularies,' says Edwin Norris, 'seems to show that there are among the N. idioms a dozen or more classes of languages, differing from each other at least as much as the more remote Indo-Germanic languages do.' To these N. idioms Dr. Krapf has given the name *Nigro-Hamitic Languages*. These may perhaps have affinities with some of the other African tongues, but not with any of the great well-defined families of languages. See further, on this subject, Dr. Prichard's *Natural History of Man*, especially a learned note by Edwin Norris, in that work, I. 323.

The condition and prospects of the Negroes, in the various countries into which they have been imported during the prevalence of the slave-trade, present a subject interesting and important. They are found in all the W. India Islands, to the number of about 3,000,000; in the United States, Brazil, Peru, and other parts of S. America; also in the Cape de Verde Islands, Arabia, Morocco, etc. In the British W. India Islands they were emancipated from slavery 1834, and in those belonging to France 1848. Slavery now exists nowhere in the W. Indies, with the exception of Cuba. In the United States, the 'colored persons' increased from 4,886,387

in 1870 to 7,638,360 in 1890. Many of the slaves were emancipated in the course of the unhappy civil war, all the negroes of secession masters being *declared* (1862, Sep. 22) emancipated by proclamation of Pres. Lincoln and act of the federal congress—the proclamation to take effect 1863, Jan. 1; at the same time that indemnities were promised to such loyal states as of their own accord decreed emancipation. Afterward, by formal amendment to the constitution, N. slavery in the United States was utterly destroyed, and the great problem which long and deeply exercised philanthropic minds has been solved—the N. having become a United States citizen at a fearful cost of blood and treasure to both his former possessor and his liberator. See SLAVERY.

The year 1879 was notable for a great stir among the blacks of the south, chiefly in the states on the Mississippi, the proportions and aim of which were those of an exodus in pursuit of better conditions of life, in Kansas or some other new western state. A point specially considered concerned measures to be taken in view of denial of the political rights of negro citizens in many localities. A conference at Nashville, May 6, took steps toward promoting emigration under the auspices of the National Migration Aid Soc., after conventions of colored citizens had been held at various prominent points.

The Nashville conference—with large attendance of delegates from Ala., Ark., Ga., Ind., Ill., La., Miss., Mo., Neb., O., Ore., Penn., Tenn., and S. Car.—adopted a report protesting against prejudices of color and caste; urged the states to adopt compulsory education, to have schools common to white and black, and, in case of colored schools only, colored teachers; asked for an industrial and technical school for colored youths, at Harper's Ferry or elsewhere, under colored regents; proposed an 'Amer. Protective Soc.' for the benefit of the blacks; resolved in favor of N. emigration to states giving security for their rights; and asked the U. S. govt. to give $500,000 in aid of such emigration. At Richmond, Va., 1879, May 19, a convention of colored citizens was held, similar in object and result. The exodus had begun early in 1879, and by Aug. 1 over 7,000 had arrived, needy and starving, in Kansas, and through the year the movement continued, aided to a considerable extent by a Kansas relief assoc. By 1880, Mar., some 25,000 had entered Kansas, and by the end of the year the number was 40,000. They came from Miss., Texas, Tenn., La., Ga., and Ala.—nearly all field hands, exceedingly ignorant; and about $150,000 were contributed for their relief. About 4,000 colored people were forwarded to Neb., Colo., Ill., and other states. In S. Car., 1881, Dec. 24–31, an exodus of as many as 5,000 colored laborers took place under a plan to settle in Ark. The same movement spread through central and southern S. Car. In 1883–85 there was a considerable emigration from the southern Atlantic states into Ark.; and 1886, Nov., a

very extensive exodus of N. laborers set in, from the hill-country plantations of Miss. to the river bottom or Yazoo country, where new levees, giving better protection from floods, promised safe occupation of 'the swamp,' the thousands of islands in which, very thinly populated, afforded the best land in the state for cotton. The heart of the lower Mississippi country, an immense region as large as Indiana, taking in parts of La. and Ark., was thus rapidly Africanized by negro immigration. In N. Car. an exodus began early in 1889, aided by emigration agents; and nearly 50,000 left the state, especially the eastern cos., destined for Kan., Ark., Texas, or Oklahoma, and a few to Miss. or La.

California passed an act, 1878, removing the words 'white male' from the state law regarding admission to the bar, thus permitting women and persons of color to qualify for practice of law. The question of the intermarriage of negroes and whites came before the U. S. district court, at Austin, Texas, 1877, and the decision of Judge Duval was that the old act of the state of Texas, 1858, prohibiting such intermarriage, was contrary to the constitution and laws of the United States, being in violation of the 14th and 15th amendments to the constitution, and of the first section of the Civil Rights Bill. In the state of Va., 1879, in the case of a negro and a white woman, his wife, convicted under the state laws against miscegenation, 1878, Mar. 14, and confined in the penitentiary, an application to the U. S. circuit court for a writ of *habeas corpus* was refused by Justice Hughes, on the ground that the U. S. courts have no jurisdiction over questions of marriage, and could not interfere with the operation of the law of Va. The question came up in the U. S. supreme court, touching the law of Ala. prohibiting the intermarriage of whites and blacks, and Justice Field delivered the unanimous opinion of the court to the effect that the law was not in violation of the constitution. In Fla. the new constitution framed 1885, June 9—Aug. 3, and ratified 1886, Nov. 2, had the provision that marriage between colored persons and white was forbidden.

In the case of two colored men tried in Cal. for the murder of a white man, 1878, a decision was made by Judge Rives of the U. S. district court that, under the Civil Rights Act, a colored man is not tried by his peers unless there are negroes as well as whites on the jury. The request of the defendants for a jury of both blacks and whites was denied by the state circuit court, and on petition to the U. S. court Judge Rives granted a new trial on the ground stated. In Va., 1879, the U. S. grand jury, under the instructions of Judge Rives, brought a bill of indictment against nine county court judges for violation of the Civil Rights Act in habitually refraining from placing colored citizens on the jury lists. At the same time, Judge Christian of the hustings court declared that he was enjoined by the law to select only such as he considered 'well qualified to serve as jurors,'

and that to place colored men on juries for the trial of colored persons, on the ground of their race, would violate the 14th amendment. The U. S. supreme court, 1880, Mar., rendered a decision sustaining Judge Rives and the indictment of state judges in Va. for refusing to put colored persons on jury lists. Justice Strong delivered the opinion, and Justices Clifford and Field dissented. In W. Va., 1879, in the case of Thomas Strander, colored, appealing to the U. S. court on the ground that the jury law of the state, under which he had been convicted of murder, was unconstitutional in excluding colored persons from jury service, the court decided that the law was unconstitutional. In Ky., 1880, in a case coming before the state court of appeals, a decision was given in conformity with that of the U. S. court in the Strander case. In the session of the supreme court of the U. S., beginning 1882, Oct., Justice Woods delivered the opinion of the court that a U. S. statute of 1871, designed to extend to negroes U. S. protection against violence of the 'Kuklux' sort, was unconstitutional, inasmuch as the amendments to the constitution, 13th, 14th, and 15th, and Section 2 of Art. IV., all were directed against state action, and left to each state criminal administration against individuals in any such matter as that of the Kuklux outrages aimed at by the U. S. statute. This decision appeared to strike at the Civil Rights Act passed by congress, 1875, to secure the equal rights of colored persons in theatres, hotels, and public conveyances; and in a case in Ky. a decision was given, in the U. S. district court, denying the right of a colored person to sue any private party for violation of the 14th amendment, because it was directed only against states, and not against individuals. If, however, the case should be one of an interstate character, as the action of a railroad passing from one state into another, there seemed no reason to doubt that the law of congress would have effect. It was in fact decided by the U. S. supreme court, 1877, that a law of La., enforcing the equal rights of colored and white in public conveyances, could not be executed against conveyances passing beyond the limits of the state, because congress alone had authority in any such interstate matter.

The Freedmen's Bureau, organized under an act of 1865, Mar. 3, to continue one year after the war, and by act of 1866, July 16, continued to 1868, July 16, and at this last date further continued another year, was withdrawn from operation in the several states 1869, Jan. 1, except as its educational department was continued. In all large towns and in many small places, schools were established, many of them summer vacation schools —(1868) 600, (1869) 1,200—to meet the eager desire of the blacks for instruction. Half a million scholars were in the bureau schools 1870, and as many more in other schools. At this date there were in operation 11 colleges, and 61 normal and 74 high schools for the higher education of colored youth; 1,280 school-houses had been erected,

at an average cost of $1,900; and $13,028,304 had been spent for all purposes of the bureau ($10,780,750 of it voted by congress), in addition to very large sums spent by other agencies (such as the Amer. Missionary Assoc., under direction of the Congl. churches, with 600 teachers in the field at one time), and including over half a million dollars sent from England in aid of colored education. A prolonged effort to secure large and continuous federal aid to schools, with special reference to the extreme needs of the negroes of the south, has been made without success. Pres. Grant, 1872, commended a bill for the purpose, as 'unanimously approved by the leading friends of education.' In 1874, Jan. 7, Mr. Hoar of Mass. presented in the house the claims of a bill proposing to aid education in all the states by the use of the proceeds of sales of public land, apportioning one-half of these, and the interest of the other half, on the basis of relative need for the first five years, as shown by comparative illiteracy, the object being to deal with the problem created in the south by negro (and other) citizenship. The movement has had the form in recent years of a bill offered by Mr. Blair, senator from N. H., in the 47th congress, fully considered and passed by the senate 1884, but not acted on by the house; again passed by the senate 1886, but not passed in the house; passed by the senate a third time 1888, but not taken up in the house; and finally, 1890, defeated in the senate by a small majority.

Virginia had, in 1879, of school age 202,842 colored to 280,849 white; of graded schools 33 colored to 95 white; of enrolled pupils 35,768 to 72,306 white; and of average daily attendance 21,231 colored to 65,771 white. The pop. of Va., 1880, was 631,827 colored to 880,376 white. In 1884 there was a school for every 70 white children, but only one for every 128 colored; yet in five years the number of colored in daily average attendance had trebled, while that of white had only doubled, and the increase of colored teachers had been equally notable. There were normal schools for colored teachers in the Richmond Institute, Richmond Normal, Boydton Institute, St. Stephen's Institute, Petersburg High School, Virginia Normal and Collegiate Institute, and the Hampton Normal and Agricultural Institute. The last of these was founded 1870, has from the first been under the able administration of Gen. Samuel C. Armstrong, as principal, and in 1872 was awarded by the state $95,000 of the proceeds of sales of land granted by congress in aid of agricultural and mechanical education. It has nearly 200 acres of land, fine buildings, and an excellent corps of teachers. (See HAMPTON NORMAL AND AGRICULTURAL INSTITUTE.) On the next to the last in the above list the state had spent (1884) $138,674, and made it an annual grant of $20,000; it had (1886) 162 academic students, (1887) 187. In 1888 the state had 2,115 colored schools to 5,154 white; 1,909 colored teachers to 5,373 white; 265,347 colored of school age to 345,-

024 white; 118,831 colored enrolled to 211,449 white; 64,422 colored in average daily attendance to 124,994 white. In N. Car. there were (1887) 212,789 colored to 353,481 white of school age, and 57·8 per cent. of the colored were enrolled in the schools to 57·2 in the white schools. In 1880 the colored of school age were 216,837 to 363,982 white. S. Car. had (1889) 69,892 colored in school to 59,357 white, and 1,622 colored teachers to 2,528 white. The Claflin Agricultural Coll. at Orangeburg, for colored youth, founded 1869, and later made a part of the state university, with an annual grant of $5,000 from the state, enrolled 946 in 1888, and 947 in 1889, with 55 teachers and superintendents. In Ga. the Atlanta University for colored youth had graduated 51 in 1879, and had 240 students, a grant of $8,000 a year from the state, 60 acres of very valuable land as an endowment, and a library of 4,000 vols. The state had (1880) 86,429 colored children at school, to 150,134 white. In 1882 the Paine Institute, to be located at Augusta, Ga., and to belong to 'the colored Meth. Episc. Church in America,' was provided for at the general conference of the Meth. Episc. Church, South, held at Nashville. In 1887 prejudice against the white teachers of Atlanta University, because they placed their own children in their classes of colored pupils, not only aroused much feeling, but caused the passage of an act denying state aid to any colored school having white pupils, or any white school having colored pupils; and after holding back the grant of $8,000 from Atlanta for two years, the $16,000 was voted to Morris Brown College, a purely colored institution of Fulton co.; also the $8,000 a year thereafter.

In Fla., 1886, there was organized a normal school at Tallahassee for the instruction of colored teachers, and another at Gainesville, each for two months; and the next year a permanent normal school for colored teachers was established at Tallahassee, and opened 1887, Oct., with 40 students. In 1888 the state had 512 colored schools and 620 colored teachers to 1,536 white schools and 1,793 white teachers. The pupils enrolled were 33,572 colored to 50,696 white.

Tenn. had (1888) 1,506 colored schools to 5,101 white; 1,640 colored teachers to 5,739 white; number of school age 161,393 colored to 478,621 white. Fisk University, at Nashville, founded 1866, under the auspices of the Amer. Missionary Assoc., is second to no school in the south providing for the higher education of the colored race. Ky. had (1887) 1,011 colored schools to 6,639 white; 107,144 colored children to 549,592 white; and appropriated for colored $203,573 to $1,044,224 for white. Under the amended school law of 1884, separate teachers' institutes and a separate state teachers' assoc. for colored teachers were established. A building for the colored normal school was dedicated 1887. Mo. had (1888) 547 colored schools to 9,272 white; 33,215 colored enrolled to 577,335 white; and of school age 47,452 colored to 804,978 white. Of the four normal schools supported by

the state, Lincoln Institute at Jefferson City is for colored students, to whom tuition is free.

In Ala., 1879, there were 40,092 colored children in school to 61,584 white. At Marion a separate normal school educated colored teachers, of whom the state had 1,423 to 2,722 white. Another school for colored teachers at Huntsville supplied the n. part of the state. At Marion a university also carried colored students through the higher departments of learning. In 1886 Ala. had 1,827 colored teachers, at the average monthly pay of $27.78, to 3,565 white, at $23.76. In 1887 Ala. provided for a university, to be called Alabama University and located at Montgomery, for higher education of colored youth. The state also appropriated $25,000 for an asylum for colored insane, and the same for a blind asylum for the colored. At Talladega the Talladega Coll. for both white and black, of either sex, was founded 1869; and, through the support of the Amer. Missionary Assoc., has developed into an effective and prosperous institution, with all departments of study—primary, academic, normal, and theological.

In Miss. the Alcorn University for colored youth, which had (1877) 48 students and four teachers, was made 1878 a state agricultural and mechanical college for the colored, and 1881 it had 160 students. Other schools for colored higher education were the normal school at Holly Springs and the Tougaloo University. The latter reported (1883) 74 male and 73 female students, with 13 teachers. The Alcorn had in 1883 graduated but 3 students since it was founded few of its 100 students a year being able to make regular attendance, and most becoming teachers before completing the course. The attendance at Alcorn 1885 had reached 145, and the state gave it $11,000 a year. That at Tougaloo was 219, the Amer. Missionary Assoc. supporting it, except as to $3,000 of a state grant. The Holly Springs colored normal school had 140 students. In 1887 Tougaloo obtained additional buildings for both school and industrial purposes. In 1889 the Alcorn school had 216 students, and the Holly Springs school 171. The free-school system was introduced into Miss. in 1886, and greatly improved provision made for the equal education of all classes.

In La., 1880, with a colored pop. of 485,200 and white 455,063, a university for the higher education of colored boys was opened in New Orleans, at the expense of the state. The colored gain shown by the census of 1880 was 33 per cent. in La. to 26 for the whites. Of registered voters, 1882, La. had 85,451 whites and 88,024 colored; 16,913 of the white, and 76,087 of the colored, were illiterate. The university for colored youth at New Orleans had 400 students 1884. The state provided $10,000 a year for its support, with a faculty of both white and colored teachers. For the year 1888–9 the number of schools for colored was 665 to 1,304 for white; teachers 670 colored to 1,696 white; average daily attendance

31,636 colored to 47,759 white; and pupils enrolled 43,601 colored to 67,313 white.

The legislature of Ark., 1879, passed a memorial to congress, asking for the passage of a bill appointing three colored commissioners to inquire into the intellectual status of the colored people of the southern states. School provision in Ark. is on the most liberal scale for both colored and white, the available funds 1888 amounting to $1,683,910; and the only normal school in the state is one for colored teachers at Pine Bluff, with a large attendance.

In Texas, 1882, the Prairie View Normal School at Hempstead, Walker co., had trained 43 colored teachers; and for the University of Texas, munificently endowed with over $700,000 and 2,000,000 acres of yet unsold land, a branch for colored students was contemplated. The state held 11 summer schools for colored teachers to 31 for whites. Texas had (1887) 2,076 colored schools to 6,911 white; 2,891 colored teachers to 8,232 white; 113,150 colored enrolled in the schools to 295,510 white; and of school age 124,842 colored to 364,953 white.

In 1879, Feb., in a case brought before the U. S. circuit court, Judge W. B. Woods gave the decision of the court that separate schools for white and colored were not a violation of the constitution, but a matter within the discretion of the school authorities.

In N. Carolina the colored people organized, 1879, a state industrial assoc., which has held most creditable annual fairs, and done much to promote agricultural and mechanical pursuits. Gov. Jarvis, 1884, bore cordial testimony to the orderly and law-abiding character of the colored citizens of the state.

The statement is made that in Ga. the colored people owned (1885) 600,000 acres of land, and paid taxes on $10,000,000 of property; and that their taxable property through the whole south could be put at $100,000,000. The returns of negro property in Ga., 1883, were $6,589,876.

In Texas, 1889, Aug. 20, a state convention of colored men was held at Waco, which protested against various denials of rights, and declared of the negroes of Texas: 'We now own about 1,000,000 acres of land, and pay taxes on $20,000,000 worth of property. We have 2,000 churches, 2,000 Sunday-schools, 2,000 benevolent associations, 10 high schools, 2,500 common schools, 3,000 teachers, 125,000 pupils attending school, 25 lawyers, 100 merchants, 5,000 mechanics, 15 newspapers, and hundreds of farmers and stockmen.'

In the 16 former slave states and the Dist. of Columbia the estimated number of persons 5 to 18 years of age—the school population (1895) was 8,297,160. Of this number 5,573,440 were white children and 2,723,720, or 32·9 per cent., colored. The total enrolment in the white schools was 3 845,414, and in the colored schools 1,441,282. The per cent. of white school population enrolled was 69, and the per cent. of colored 52·92. The whites had an average

daily attendance of 2,510,907, or 65·30 per cent. of their enrolment, while the average attendance of the blacks was 856,312, or 59·41 per cent. of their enrolment. There were 89,276 white teachers and 27,081 colored teachers in the public schools. Since 1876 the Southern States have expended about $383,000,000 for public schools, and it is estimated that between $75,000,000 and $80,000,000 of this sum have been expended for the education of colored children. In 1895 the enrolment of colored pupils was a little more than 27 per cent. of the public-school enrolment in the Southern States.

The colored race in the south may be said to have been totally illiterate in 1860. In 1870 more than 85 per cent. of them, 10 years of age and over, could not read and write; in 1880 the percentage of illiterates had been reduced to 75, and in 1890 the illiterates comprised about 60 per cent. of the colored population 10 years of age and over. In several of the Southern States the percentage is even below 50 per cent. In 30 years 40 per cent. of the illiteracy of the colored race has disappeared. In sections where the colored population is massed and removed from contact with the whites, as in the 'black belt' of S. C., Ga., Ala., Miss., and La., the percentage of illiteracy is highest.

There were in the U. S. (1895) 162 institutions for the secondary and higher education of the colored race. Six of these schools were outside the former slave states. Of the 162 institutions, 32 were of the grade of colleges, 73 were classed as normal schools, and 57 were of secondary or high-school grade. State aid was extended to 35 of the 162 institutions, and 18 of these were wholly supported by the states in which they were located; the remaining schools were supported wholly or in part by benevolent societies and from tuition-fees. In the 162 institutions were employed 1,549 teachers, 711 men and 838 women. The total number of students was 37,102; of these 23,420 were in elementary grades, 11,724 in secondary grades, and 1,958 were pursuing collegiate studies. Of the 13,682 students in secondary and higher grades, there were 990 in classical courses, 811 in scientific courses, 295 in business courses, and 9,331 in English courses. There were 4,514 colored students studying to become teachers. There were 649 students graduating from high-school courses, 844 graduates from normal courses, and 186 college graduates. There were 1,166 studying learned professions, 1,028 men and 138 women. Of the professional students 585 were studying theology, 310 medicine, 55 law, 45 pharmacy, 25 dentistry, and 8 engineering.

The importance of industrial training is generally recognized by teachers of the colored race, and the negroes themselves now see its value. Of the 37,102 students in the 162 colored schools, nearly one third, or 12,058, were receiving industrial training: of these 1,061 were learning farm and garden work, 1,786 carpentry, 235 bricklaying, 202 plastering, 259 painting, 67 tin and sheet-metal work, 314 forging, 200 machine-shop work, 147 shoemaking, 706

printing, 1,783 sewing, 5,460 cooking, and 1,017 other industries.

Colored institutions received benefactions 1894–5 amounting to $304,822. They received state and municipal aid amounting to $188,936; from productive funds $98,278; from tuition-fees $101,146, and from other sources and unclassified sums amounting to $534,272. The latter amount includes the sums received by colored agricultural and mechanical colleges from the United States. The income of the colored institutions amounted to about $923,000. In the libraries of the 162 schools there were 175,788 vols., valued at $357,549. The value of grounds, buildings, furniture, and scientific apparatus was $6,475,590, and the value of other property and endowments $2,381,748.

The statistics of farm and home ownership and of mortgage indebtedness of the eleventh census throw some light on the pecuniary condition of the negro race. The total number of farms and homes in the United States (1890) was 12,690,152, of which negroes occupied 1,410,769, or 11·1 per cent. The proportion of negroes to the total population was at that time 12·20 per cent., showing a deficiency in the proportion occupying homes and farms when compared with the population. The number of farms in the country was 4,767,179. Of these 549,642, or 11·5 per cent., were occupied by negroes, being a proportion greater than that of farms and homes combined. The number of homes, as distinguished from farms, in the country was 7,922,973, of which 861,137, or 10·9 per cent., were occupied by negroes, being a proportion less than that of farms and homes combined. Of the 549,642 farms occupied by negroes, 120,738, or 22 per cent., were owned by their occupants. The corresponding proportion for whites was 71·7 per cent. As regards tenants, the reverse was the case, the proportions being for whites 28·3 per cent., and for negroes 78 per cent. More than three-fourths of the farms occupied by negroes were rented; in other words, more than three-fourths of the negro farmers were tenants, while less than one-fourth of the white farmers were tenants. Of the farms owned by negroes, 90·4 per cent. were without encumbrance. Of those owned by whites, 71·3 were without encumbrance, showing a much larger proportion encumbered than among those owned by negroes. Of 861,137 homes occupied by negroes, 143,550 were owned by their occupants and 717,587 were rented, the proportions being 19 per cent. and 81 per cent. Corresponding proportions for whites were 39·4 per cent. and 60·6 per cent. Of the houses owned by negro occupants, 126,264, or 87·7 per cent., were free from encumbrance, and 12·3 encumbered. The male negroes occupied in agriculture numbered 1,329,584.

NE'GRO, Rio: see Rio Negro.

NE'GRO MIN'STRELSY: species of singing which originated among the negro slaves of the southern states, and has long been popular at public entertainments. The sentiment of the earlier of these negro melodies was of the most simple kind, the words mostly broken English, and the harmonies confined chiefly to two chords—the tonic and dominant. How the airs were composed has been a matter of curious inquiry. Some of them are believed to be broken-down and otherwise altered old psalm-tunes, which had been caught up by the more musical of the negro race. In some instances, the singing of the melodies is accompanied with grotesque gestures; the effect being to give the idea of good-nature and love of fun in the dark-skinned minstrels. Negro melodies may be said to have been made known by 'Dan' Rice, who first in New York, 1831, afterward in London, created a sensation by his singing of *Jim Crow*. Other songs followed, such as *Jim along Josey* and *Buffalo Gals;* and there was created a very characteristical music. Becoming popular, and addressed to fashionable audiences, negro minstrelsy now comprehends a large variety of songs, with pleasing airs, the whole much in advance of the original negro compositions, and therein also less characteristic. E. P. Christy, who began as conductor of a band of minstrels at Buffalo 1842, and who established himself in New York, 1846, was one of the introducers of these improvements. At first, his troupe were called the 'Virginia Minstrels,' afterward the 'Christy Minstrels.' His great success brought other troupes into the field. The minstrels usually are the negroes only in name, being white with faces and hands blackened. A company of educated negro *Jubilee Singers*, singing the more genuinely characteristic religious songs of the negro slaves in the United States, were successful in raising, in the United States and in Great Britain, a large sum of money for Fisk Univ., Nashville, Tenn., in which they were students.

NEG'ROPONT: see EUBŒA.

NE'GROS, ISLA DE: see PHILIPPINE ISLANDS.

NEGUNDO, *nē-gŭn'dō:* genus of trees of nat. order *Aceraceæ* (see MAPLE), differing from the maples chiefly in the diœcious flowers being destitute of petals, and in the pinnated ash-like leaves. The COMMON N., or ASH-LEAVED MAPLE, is a native of N. America, now frequent in Britain as an ornamental tree.

NEGUS, n. *nē'gŭs* [said to be after Col. *Negus*, in Queen Anne's time]: mixture of either port or sherry wine and hot water sweetened with sugar and sometimes flavored with lemon-peel and spices: favorite beverage in England.

NEHEMIAH, *nē-hē-mī'ah:* Jewish patriot: son of Hachaliah, probably of royal descent: mentioned in the Bible first as cup-bearer to Artaxerxes Longimanus in his palace at Shushan, about B.C. 444. Having learned the sad fate of the returned colonists in Jerusalem, he prevailed on the king, in whose court he seems to have had high place, to send him to his brethren there with full powers 'to seek their welfare.' For twelve years (444–432), he was untiringly engaged as 'governor' in works for their safety from within and without: refortifying the city walls, notwithstanding the hindrances and dangers that beset him on all sides; inducing people from the country to take up their permanent abode in the city, thus promoting its prosperity; and, above all, rekindling the flame of ancient piety and the enthusiasm for the observance of the Law in the hearts of the rough and untaught immigrants. He then returned to Persia, but not long afterward—within a period whose duration is not known—he had again to obtain leave from the king to return to Jerusalem for the purpose of abolishing the many abuses that had crept in during his brief absence. His new efforts in private and in public were chiefly against the foreign elements mingled with the people. He enforced the rigorous observance of Feast and Sabbath, and rearranged the Temple service in accordance with its primeval purity, procuring at the same time the means for its proper support by inducing the people to offer the tithes as of old. His second stay at Jerusalem seems to have lasted 10 to 15 years; but the dates, as gathered from circumstantial evidence only, are exceedingly vague. He seems to have lived to an old age, but the place and year of his death are unknown. Whatever may have been his part in the formation and redaction of the biblical canon, there can hardly be a doubt that, among the reformatory works undertaken by him, the collection, and perhaps the editing, of some of the books of the Old Testament must be included.

The book known under his name (in 13 chapters) is believed only partly his own work. Recent investigation ascribes to him only the first six chapters, part of the seventh, and the last chapter and a half; the rest being a compilation by other hands. Its style and character are very simple, free from anything supernatural or prophetic. Its guidance is important in mapping out the topography of the ancient Jerusalem. Its language resembles much that of Chronicles and Ezra, and is replete with Aramaisms and other foreign, partly Persian, words. Originally considered a mere continuation of the book of Ezra, it was by the Greeks and Latins at first called 'The Second Book of Ezra.' Gradually, however, it assumed its present independent position in the canon, after Ezra. It is supposed to have been written or compiled toward the end of N.'s life.

NEIF and NEAF, n. *nēf* [Icel. *hnefi;* Dan. *naeve*, the fist: Scot. *neff; neif* or *neive*, a hand]; in *OE.* and *Scot.* a closed hand: a fist.

NEIF, n. *nēf* [OF. *neïf* or *naïf*, a born serf—from **L.** *natīva*, born]: in *OE.*, a female born in servitude; a female serf.

NEIGH, n. *nā* [AS. *hnægan;* Icel. *hneggia;* Low Ger. *nichen;* It. *nitrire*, to neigh: Scot. *nicher*, to neigh, to laugh coarsely—all imitative of the sound]: the cry of a horse: V. to cry as a horse. NEIGH'ING, imp.: N. the act of crying as a horse. NEIGHED, pp. *nād.*

NEIGHBOR, n. *nā'bėr* [AS. *neah-bur*, a neighbor—from AS. *neah*, nigh, near, and Dan. *boe;* Ger. *bauen*, to till, to cultivate: Dut. *boer*, a peasant, a boor; Ger. *nachbar*]: one who lives near to another; an intimate; in *Scrip.*, a fellow-being: ADJ. the adjoining; next: V. to live near to; to adjoin. NEIGH'BORING, imp.: ADJ living or being near to. NEIGHBORED, pp. *nā'bėrd.* NEIGH'BORHOOD, n. *-bėr-hûd*, place or part near; adjoining district; vicinity; proximity. NEIGH'BORLY, a. *-lĭ*, friendly; social; becoming a neighbor: AD. after the manner of a neighbor. NEIGH'BORLINESS, n. *-lĭ-nĕs*, state or quality of being neighborly.

NEILGHERRY, *nēl-ghĕr'ē* (properly NILGIRI, *nĭl-ghē'rē*), HILLS [Skr. *nîla*, blue, and *giri*, mountain]: remarkable group of mountains in s. Hindustan, entirely isolated, with the exception of a precipitous granite ridge, 15 m. in width, which connects it with the high table-land of Maisur on the n.: lat. 11° 10′—11° 38′ n., long. 76° 30′—77° 10′. The shape of the group is that of a triangle, of which one side faces the dist. of Malabar on the west: greatest length, about 40 m.; average breadth, about 15 m. The base of the mountains is covered by a dense and unhealthful forest, swarming with wild animals, among which are the elephant and tiger; but in the higher regions of the Hills, wood is comparatively scanty. The surface of the group is undulating, rising, in the peak of Dodabetta, near the centre, to the height of 8,760 ft., the greatest height yet ascertained in India s. of the Himalayas. The Hills for the most part consist of granite, covered often to the depth of more than 10 ft. by a richly productive black soil. There are several morasses yielding peat which is used for fuel. The higher lands form a fine open grass country, covered with the vegetation of the temperate zone, and inhabited by a most remarkable tribe, the *Tudas* or *Toruvars* (herdsmen). This tribe numbers only about 2,000 persons. The men are tall and handsome, with Roman noses, fine teeth, and large, expressive eyes; the women are singularly beautiful. Their religion is Theism; they have no idols. Owing to their great elevation, the N. H. have a delightfully cool climate, and are much resorted to on this account by invalided Europeans. The principal station, and the only place on the Hills that deserves the name of a town, is Utakamand, in the centre of the Hills, 7,300 ft. above sea-level. Its climate is cold and damp during the monsoon; at other times it is intensely dry, and the mean annual temperature is 58°.

NEILGHER′RY NET′TLE (*Girardinia Leschenaultiă*): plant of nat. order *Urticeæ*, nearly allied to the true nettles, and possessing in a high degree the stinging power common in them. It is frequent on all the higher ranges of the Neilgherry Hills. The bark yields a valuable fibre, which the natives obtain by first boiling the whole plant, to destroy its stinging properties, and then peeling the stalks. The fibre is of great delicacy and strength, and is worth £200 a ton in England. The cultivation of the plant is therefore thought likely to be renumerative.—Markham's *Travels*.

NEILL, *nēl*, THOMAS HEWSON: 1826, Apr. 9—1885, Mar. 12; b. Philadelphia. He studied two years at the Univ. of Penn., graduated from West Point 1847, and was an assistant prof. in the latter institution 1853–57. He was in the U. S. infantry on the frontier several years, and reached the rank of captain 1857. At the opening of the civil war he aided in organizing troops, was appointed col. of vols. 1862, served with distinction through the war, and was frequently promoted until he became brevet brig.gen. in the army and brevet maj.-gen. vols. He was in command 1869–71 at Governor's Island, N. Y., in frontier service against the Indians 1874–5, an officer at West Point, 1875–79, after which he was col. of a cavalry regt. till 1883, when he was retired for disability. He died in Philadelphia.

NEI′RA: see MOLUCCAS.

NEISSE, *nīs ėh*: town of Prussian Silesia, fortress of the second rank; in a broad valley on the Neisse, an affluent of the Oder, 30 m. s. w. of Oppeln. It consists of the town proper on the right bank, of the Friedrich's Town, and of the Preussen Fort on the left bank. It contains two great squares, has eight Catholic and two Evangelical churches, a hospital, theatre, etc. It carries on manufactures of arms, chemical products, and tobacco, and establishments for spinning and weaving are in operation. N. was formerly the chief town of a principality, and residence of a prince-bishop. Pop. 24,271.

NEITHER, a. *nē′thėr* or *nī′thėr* [AS. *nather*, neither—from *ne*, not, and Eng. *either*]: not the one or the other; not either: CONJ. not either; nor yet. *Note.*—The old spellings are *noither*, *nouther*, *nother*, whence the abbreviated form *nor*. The modern spelling was made under the influence of *either*. *Neither* is used to introduce two or more co-ordinate clauses, and as the correlative of *nor*, as, '*neither* John *nor* James could come.' *Neither* follows *not*—'Ye shall not eat of it, *neither* shall ye touch it.'

NEJD: see ARABIA: WAHABIS.

NEJIN, *nā-zhēn′*: ancient town of Little Russia, govt. of Tchernigov, on the Oster, an affluent of the Dnieper, about 80 m. n. e. of Kiev. It fell into the hands of the Lithuanians 1320, and of the Poles 1386, but was annexed to Russia 1654. Many of the inhabitants are descendants of Greek immigrants who settled here in the reign of Catharine II. The principal industry is the cultivation of tobacco, which is very extensive. The chief institutions are two monasteries, 25 churches, and a lyceum. Pop. (1880) 21,590; (1897) 32,108.

NELATON, *nā-lâ-tōng′*, AUGUSTE: 1807, June 17—1873, Sep. 21; b. Paris. He studied under the famous surgeon Dupuytren, graduated 1836, became a surgeon in the leading hospitals of the city, was adjunct prof. to the Paris Faculty of Medicine 1839–51, and prof. of clinical surgery 1851–67. In the latter year he became a member of the Acad. of Sciences. In 1868 he was elected senator. He was employed as a surgeon by Napoleon III. He was a skillful operator, invented an improved process for the extraction of calculi from the bladder, and a probe for tracing the course of gun-shot wounds. In connection with Velpeau and other surgeons, he published *Rapport sur les Progrès de la Chirurgie* (1867), and *Éléments de Pathologie Chirurgicale* (5 vols. 1844–60, 2d ed. 1867–70). He died in Paris.

NELLORE, *nĕl-lōr′*: town of Brit. India, cap. of dist. of N., presidency of Madras; on an elevation on the right bank of the northern Pennar, 20 m. from its mouth, 95 m. n.n. w. from Madras. It is irregularly built, and the population in some places much crowded; but there are some good streets. The abundant supply of water contributes to the health of the town. N. was formerly an important fortress. It is a curious incident that, in the end of the 18th c., a pot filled with Roman gold coins and medals—chiefly of Trajan, Adrian, and Faustina—was found under the ruins of a small Hindu temple at Nellore.—Pop. 32,040.

NELSON, *nĕl′son*: town, capital of the province of N., in New Zealand; at the n. end of South Island, at the mouth of the Maitai, a small river, and at the head of a large bay called Blind Bay. The situation is very beautiful, on a flat, hemmed in by rugged hills, amid almost tropical luxuriance. The harbor, however, admits vessels of not more than 500 tons at high water, and this has much retarded the progress both of the town and the settlement. The centre of the town is a hill 40 ft. above the surrounding streets, and laid out as a square with an Episcopal church in its centre. N. is the seat of a bishop. The city was founded 1841. Pop. (1896) 6,659; with suburbs, over 10,000. Three newspapers are published here. The manufactures comprise cloth and leather.

NELSON, *nĕl'son*, DAVID: 1793, Sep. 24--1844, Oct. 17; b. near Jonesborough, Tenn. He studied at Washington College, Va., and commenced a medical course in Danville, Ky., which he completed in Philadelphia. In the war of 1812 he was an army surgeon. On the return of peace he commenced practice in Jonesborough, where he was highly successful. He had professed religion in his youth, but afterward became a pronounced infidel. When convinced of his error, he again accepted Christianity, prepared himself for the ministry, and was licensed to preach 1825. After preaching three years in Tenn. he followed his brother as pastor of a Presb. church in Danville, Ky., where he remained two years. Removing to Mo. 1830, he founded Marion College, and was elected its president. He strongly favored emancipation, which made him unpopular in that vicinity, and caused his removal to Ill., 1836, where, a short distance from Quincy, he established an educational institution for young men. He was a frequent writer for the religious press, and published, 1836, *The Cause and Cure of Infidelity*, reprinted in England and elsewhere, and has passed through many editions. He died at Oakland, Ill.

NEL'SON, HORATIO, Viscount: greatest of Britain's admirals: 1758, Sep. 29—1805, Oct. 21; b. Burnham Thorpe, Norfolk, of which place his father, Edmund N., was rector. His mother's maiden name was Suckling, and through her he could claim collateral kinship with Sir Robert Walpole. As a child, he was feeble and sickly; and throughout life his small, frail, and attenuated frame seemed to consort poorly with the daring and impetuous spirit which 'stirred and lifted him to high attempts.' At the age of 13, he entered the royal navy, commencing his career in the *Raisonnable*, 64 guns, commanded by his uncle, Capt. Suckling. Then, even more than now, promotion in the first stages of the profession was determined by admiralty interest; and fortunately for him and for England, his uncle, shortly afterward becoming comptroller of the navy, was able to facilitate his rise. His promotion was nearly as rapid as it could be, and before he was quite 21, he had attained the rank of post-capt., which fairly opened the way for him to the higher honors of the service. Thenceforward for some years, he was nearly constantly employed in a variety of harassing services; yet even in these he gained brilliant reputation in professional circles. But with the advent of the war with revolutionary France, the time had come when he was to 'flame amazement' on the world by a series of noble deeds, in the lustre of which all other naval glory looks pale. In his obscurer years, he seems to have had prescience of a grand destiny: thus, on one occasion, he writes: 'One day or other I will have a long gazette to myself. I *feel* that such an opportunity will be given me. I cannot, if I am in the field of glory, be kept out of sight; wherever there is anything to be done, *there Providence is sure to direct my steps.*' In 1793, appointed

to the *Agamemnon*, 64 guns. He took a distinguished part, among other services, in the sieges of Bastia and Calvi, in Corsica, losing an eye at Calvi; and in the celebrated action of Sir John Jervis off Cape St. Vincent, with the Spanish fleet, it was mainly to a maneuver of extreme and masterly daring, executed by Nelson, in defiance of orders, that the commanding officer was indebted for the splendid victory and for the peerage with which it was rewarded. Though later, an expedition which N. commanded against Teneriffe had failed disastrously, with loss to himself of his right arm in the assault, it was on all hands admitted that everything had been done on the occasion which skill and valor could effect, and N., on his return to England 1797, was received with general acclamation. He was invested with the order of the Bath, and a pension of £1,000 a year was voted to him. Being next year intrusted with a fleet, he signalized this his first independent command of any magnitude by the stupendous victory of the Nile, memorable in naval annals as the completest annihilation of an enemy on record: see ABOUKIR. Finding the French fleet—to which his own was considerably inferior in force—skilfully moored so as to defy ordinary attack, he adopted the novel expedient of doubling on the enemy's ships, and was rewarded with success the most consummate. Of the French line of battle, two ships only escaped to be afterward captured; and it was considered that solely to a wound in the head, which in the heat of the action prostrated N., did even these owe their temporary safety. Honors from all quarters were now showered upon him; and in particular the gratitude and enthusiasm of his countrymen were signified by the title bestowed on him of Baron Nelson of the Nile, and a grant of £2,000 a year for his own life, and the lives of his two immediate successors. The Battle of the Nile indeed has been said to make a new epoch in British naval history. For his services immediately subsequent, in effecting the expulsion of the French from Naples, the Neapolitan king rewarded him with the dukedom of Bronte and a domain of £3,000 a year. These last honors, however, were in one sense dearly purchased. The single suspicion of a blot on his public fame is in regard of his relations with the corrupt court of Naples, and of certain questionable acts into which by these he was led. In his private character, the only flaw was his infatuated attachment to Lady Hamilton, wife of the English ambassador at Naples, a woman of questionable antecedents, but perilous fascination, with whom he was there thrown in contact. The influence which she now obtained over him, she continued to the end to exercise. Early in life he had married, and married happily. In his usual character and his proper nature, N. was generous as well as brave. It is not necessary to comment on the fact that to the charms of an impure adventuress he sacrificed, on his return to England, the wife to whom before he had been tenderly devoted.

NELSON.

His next magnificent naval exploit was the battle of Copenhagen 1801, in which, after a struggle of terrible severity, he shattered the naval power of Denmark, and with it the dreaded coalition against England of the three northern kingdoms. Never were the characteristic and heroic qualities of the man more brilliantly displayed than on this most trying occasion. In the moral courage to accept responsibility at all hazards, no man ever surpassed him. In the heat of the battle, his chief, Sir Peter Parker, in deadly anxiety as to the issue of what at a distance seemed a hopeless conflict, signalled him to discontinue action. 'Damn the signal!' said N., when this was reported to him. '*Keep mine for closer battle flying.* That's the way I answer such signals. Nail mine to the mast.' And with the certainty of professional disgrace and ruin staring him in the face in case of failure, he worked out his grand triumph.

Had N.'s services here ceased, his fame would still have been assured as the greatest of England's naval heroes. But a crowning glory awaited him. In the earlier part of 1805, glowing with fierce ardor and impatience, he had chased half round the world a French fleet of nearly double the force of his own, scared by the very terror of his name; and on the morning of the memorable Oct. 21 of that year, the desire of his eyes was satisfied, when in the Bay of Trafalgar he saw before him the combined navies of France and Spain moving to meet him in frank fight. Of the glorious consummation which followed, we need not speak in detail. Ere night, the power of France upon the seas was annihilated, and her threatened invasion of England had become an abortive dream. But N. was no more. He died as such men wish to die, amid the thunders of his mightiest victory.

The character of N. was, for a man of his greatness, unusually simple and transparent. He had singleness of aim and aspiration. Literally on fire with ardor and enthusiasm, he was driven by it imperiously in one direction. The greatest of sailors—he was a sailor and little else. In coolness, foresight, promptitude, instant, intuitive decision, and a daring which, even when it seemed at times to touch temerity, was yet regulated by reason, he has probably never been excelled. His nature was genial and humane. Southey's *Life of N.* is a model biography; there are lives also by Clarke, Pettigrew, Allen, and others. N.'s Dispatches and Letters were edited by Sir Harris Nicolas (7 vols. 1844–46).

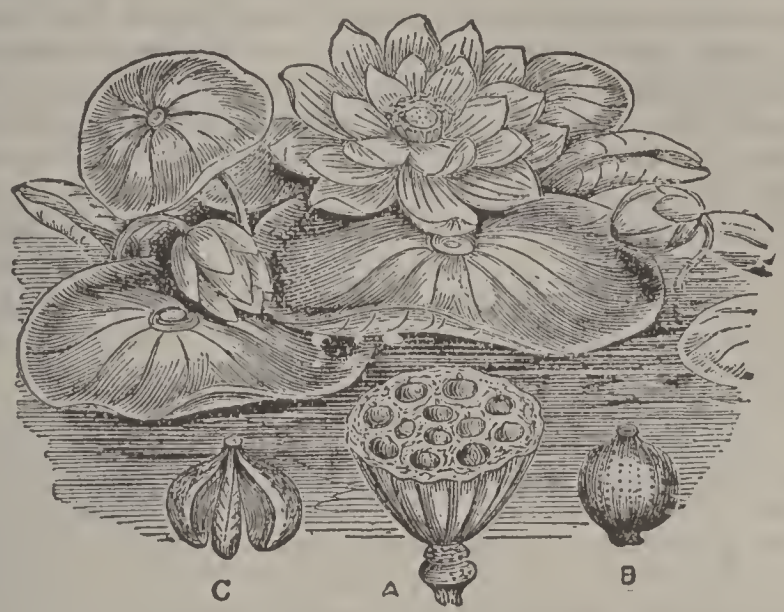
NELSON RIVER: large river in Canada, issuing from the n. end of Lake Winnipeg, and falling into Hudson's Bay, where it is called sometimes the Katchewan. Its course is only 400 m., but it discharges an enormous quantity of water into the sea. Port Nelson at its mouth is important as one of the points by which it has been proposed to establish direct water communication between the Canadian northwest and England; but the river is navigable for large steamers only some 70 or

80 m. The N. is the seaward continuation of the Saskatchewan (q.v.), which empties into Lake Winnipeg at its n. end about 50 m. from the point at which the N. issues from the lake.

NELSON, THOMAS: 1738, Dec. 26—1789, Jan. 4; b. York co., Va. He was educated in England. On his return to America 1761, he became a member of the Va. house of burgesses. He inherited a large fortune, and was noted for hospitality. He was prominent in the events which led to the Revolution, favored the formation of a military force 1775, and was elected, col. of a regt. He soon resigned his military office to enter the continental congress 1776. He had served in the provincial conventions of 1774, 5, 6, and in the latter, which had met to frame a constitution for Va., had offered a resolution that the delegates to congress from that province should propose that the colonies be declared independent. He signed the Declaration of Independence 1776, July 4. On account of ill health he resigned his seat in congress 1777. Later in the same year he was commander-in-chief of the Va. troops. He raised a cavalry force largely at his own expense; and was again in congress 1779, but illness soon compelled his retirement. When the state of Va. 1780 called for a loan of $2,000,000 to aid congress in prosecuting the war, he became security for a large sum, besides advancing money to pay two Virginia regiments to which the govt. was largely indebted. He was gov. of Va. 1781, commanded the state militia at the siege of Yorktown, and ordered the artillery to fire upon his own house, which he supposed to be occupied by Cornwallis. At the close of the siege Washington publicly thanked him for his 'activity, emulation, and bravery.' His last years were spent in retirement and poverty. For the vast sums of money that he had advanced to the govt., no return was ever made to himself or his family, and no stone was placed over his grave. He died and was buried in Yorktown Va.

NELSON, WILLIAM: 1825–1862, Sep. 29; b. Maysville, Ky. At the age of 15 he entered the navy, in the Mexican war had command of a naval battery at the siege of Vera Cruz, in 1855 reached the rank of lieut., and three years later was in command of the *Niagara* when it carried back to Africa the blacks taken from the slave ship *Echo*. Early in the civil war he was promoted lieut. commander and had charge of the fleet of gunboats on the Ohio river. He left the naval to engage in the military service; and 1861, Sep. 16, was appointed brig.gen. vols. He formed various camps for the mustering in of Union troops in Ky., was in several battles, and was in command of a division of the army at Shiloh. He also commanded the Union forces at Louisville when that city was menaced by the Confederates; and 1862, July 17, was promoted maj.gen. vols. In a quarrel at the Galt house, Louisville, he was shot and killed by Gen. J. C. Davis.

NELUMBO, *nē-lŭm'bō* (*Nelumbium*): genus of aquatic plants included by some botanists in the nat. order *Nymphæaceæ* (q.v.); but by others constituted into an order, *Nelumbiaceæ*, differing in the lack of albumen in the seed, and in the distinct carpels, which are buried in the cavities of a large fleshy receptacle. The flowers and leaves are very similar to those of water-lilies. The species are few, and are found in warm parts of Asia, in n. Africa, and in N. America. They all are distinguished by the beauty of their flowers. *N. speciosum* is the



Lotus (*Nelumbium speciosum*).

A, the ripe receptacle of Nelumbium Speciosum; B, a seed; C, a seed, with the two cotyledons so separated as to show the large plumule which they inclose.

Egyptian Bean of Pythagoras, the *Lotus* (q.v.) of the Hindus, held sacred by them and by the people of Thibet. It is much esteemed and cultivated also in China, and elsewhere in the East, for its seeds, roots, leaf-stalks, and flower-stalks, all of which are eaten. It has been used as food by the Egyptians from remote antiquity. The seeds are in size and shape like acorns, with a taste more delicate than that of almonds. The root contains much starch, and *Chinese arrow-root* is said to be obtained from it. Slices of it are often served up at table in China. Great quantities are pickled with salt and vinegar, and eaten with rice. The powdered root makes excellent soup with water or milk. The flowers are generally rose-colored, seldom white. The ancient Egyptian mode of sowing this plant, by inclosing each seed in a ball of clay, and throwing it into the water, is practiced at the present day in India.—*N. luteum* is a N. American species, extending almost as far n. as Philadelphia; with yellow flowers. The seeds are sought by children, and were in demand among the Indians, and the farinaceous roots when boiled are agreeable food

NEMALITE, n. *nĕm′ă-līt* [Gr. *nēma*, a thread; *lithos*, a stone]: fibrous hydrate of magnesia.

NEMATELMIA, n. *nĕm′ă-tĕl′mĭ-ă* [Gr. *nēma*, thread; *hĕlmins*, a worm]: term applied by recent zoologists to a large and important class of the division *Vermes* (see WORMS: ZOOLOGY). The worms belonging to this class are of more or less elongated cylindrical form. Their skin is thick and strong, and is usually wrinkled in such a manner as to give the body an annulated appearance, which, however, disappears if the animal is placed in water. The nervous system in the higher forms (as the *Ascarida*) consists of two lateral ganglia at the anterior extremity, which are united by a slender nervous ring, and from which two lateral nervous trunks proceed to the posterior part of the body; while in the lower forms no distinct nervous system can be recognized. No special organs of the senses are found; but a general sense of touch is probably present. The digestive organs are extremely simple. In one order (the *Acanthocephala*), no trace of an intestinal canal can be detected; in another order (the *Gordiacea*), there is a mouth, but no anus; while the higher forms are provided with mouth, intestinal canal, and anus. In the higher forms, a kind of vascular system is developed in the skin, in the shape of canals, in which the nutrient fluid is propelled by the movements of the body. No distinct respiratory organs can be detected; but in some genera there are glands whose object is not clearly known. These worms are unisexual; but the males are comparatively rarely found, and are always smaller than the females. With the exception of two families—the *Urolabea* and *Anguillulidæ*, or paste and vinegar eels—all the animals of this class are parasitic (see ASCARIS: TRICHINA: GUINEA-WORM: EELS in paste; STRONGYLUS); Carus said that 'probably all the nematelmia live as parasites, either during their whole lives or during certain stages of their existence.

The N. are sometimes termed *Round-worms*, just as the Platyelmia (tape-worms, flukes, etc.) are called *Flat-worms*. Usually, however, the term round-worm is restricted to the *Ascaris lumbricoides*, the most common of the human entozoa.

This class is divisible into three very distinct orders, viz.: the *Acanthocephala*, destitute of an intestinal canal; the *Gordiacea*, having an intestinal canal, but no anus; and the *Nematoidea*, having a perfect intestinal canal provided with two orifices.

NEMATHECIUM, n. *nĕm′ă-thē′shĭ-ŭm* [Gr. *nēma*, a thread; *thēkē*, a chest, a sac]: in *bot.*, a case containing threads, as in some species of Sphærococcus.

NEMATOCYSTS, n. plu. *nĕm-ăt′ō-sĭsts* [Gr. *nēma*, thread; *kustis*, a bag]: in *zool.*, the thread-cells of the Cœlenterata.

NEMATODA, or NEMATOIDEA, n. plu. *nĕm-ă-toy'dĕ-ă* [Gr. *nēma*, thread; *eidos*, resemblance]: highest order of the Nemathelminthes, and indeed of intestinal worms generally, inasmuch as they present a distinct nervous system, a complete intestine provided with mouth and anus, and distinct sexual organs. The history of their development is not fully known; but there is no reason to believe that these animals undergo any remarkable metamorphoses, although some perforate the intestinal walls, and become encysted in parenchymatous organs. The great majority of the nematoda are parasitic. The nematoda are divided by Carus into 12 families, all the members of which are known only in a parasitic state of existence, excepting certain genera of the first and second family.

Although the intestinal canal is the most common residence of these worms, some, as *Trichina spiralis*, are found chiefly in the muscles; others, as *Filaria medinensis*, in the subcutaneous cellular tissue; others in the kidneys, lungs, etc. See ENTOZOA. NEMATOID, a. *nĕm'ă-toyd*, long and slender; thread-like. NEMATOPHORES, n. plu. *nĕm-ăt'ō-fōrz* [Gr. *phorĕō*, I carry]: in *zool.*, processes on the cœnosarc of certain of the Sertularida, containing numerous thread-cells at their extremities.

NEMATOPH'YTON: a genus of fossil algæ, preserved in the Devonian rocks of the eastern United States and Canada, the stems of which were often several inches in diameter. The best known species is *N. logani*.

NEMEA, *nē'mē-a:* ancient name of a deep and well-watered valley of Argolis, in the Peloponnesus, between Cleonæ and Phlius, lying n. and s., 2 to 3 m. long, and more than half a mile broad. It possessed a sacred grove, with a magnificent temple of Zeus, and was famed for the *Nemean Games*, which took place four times in two Olympiads in an adjacent woody valley. This was one of the great national festivals of the Greeks, and, according to one legend, was founded by the seven princes who were combined against Thebes; according to another, by Hercules after his victory over the Nemean Lion. The games consisted partly of exercises of bodily skill and strength—such as chariot-racing, quoit-throwing, wrestling, running in armor, horse-racing, boxing, throwing the spear, and archery, and partly of musical and poetical competitions. The prize was originally a crown of olive twigs, afterward of parsley. We have 11 odes by Pindar in honor of victors in the Nemean Games.

NEMEÆ, n. plu. *nĕm'ĕ-ē* [Gr. *nēma*, thread]: in *bot.*, a name once applied to cryptograms, in allusion to their germination by a protruded thread, without cotyledons. NEMEAN, a. *nĕm-ē'ăn*, lengthened like a thread.

NEMEAN, a. *nē-mē'ăn:* pertaining to *Nemea*, in anc. Greece, or to the games held there.

NEMERTES, *nē-mėr'tēz:* genus of marine *Annelida*, type of a family, *Nemertidæ*, remarkable for the prodigious length which some of the species attain, which, in their most extended state, is 30 or 40 ft. But the animal which stretches itself out to this length, is capable of suddenly contracting itself to three or four ft. The structure is similar to that of leeches, but there is no sucker. These annelids feed upon mollusks by sucking them out of their shells. They generally lurk in the mud or sand of the sea-coast, and are sometimes drawn up with the nets or lines of fishermen. They twine themselves into knots and coils, apparently inextricable, but without any real entanglement. The life-history of the *Nemertidæ* is curious. The embryo has at first a ciliated, non-contractile, oval body; from which there issues a small actively contractile worm, leaving behind it the oval skin, and this worm grows to the size above mentioned. The larval state, however, exhibits a cleft with raised edges, which becomes the mouth of the perfect animal.

NEMERTIDA, n. plu. *nĕm-ėr'tĭ-dă* [Gr. *nēmĕrtēs*, unerring, true]: a division of the worms, usually called 'ribbon-worms.'

NEMESIS, n. *nĕm'ĕ-sĭs* [Gr. distribution of what is due —from *nemō*, I distribute]: a female Greek divinity: according to Hesiod, the daughter of Night; originally a personification of the moral feeling of right and a just fear of criminal actions—in other words, of the conscience. Afterward, when an enlarged experience convinced men that a Divine will found room for its activity amid the little occurrences of human life, N. came to be regarded as the power constantly preserving or restoring the moral equilibrium of earthly affairs—preventing mortals from reaching that excessive prosperity which would lead them to forget the reverence due to the immortal gods, or visiting them with wholesome calamities in the midst of their happiness. Hence originated the latest and loftiest conception of N., as the being to whom was intrusted the execution of the decrees of a strict retributive providence—the awful and mysterious avenger of wrong, who punishes and humbles evil-doers, and in particular the insolent and haughty. Hence, figuratively, N. signifies the retributive justice which pursues and vertakes the proud. N. was thus regarded as allied to Até (q.v.) and the Eumenides (q.v.). She was sometimes called Adrastēa and Rhanmusia, the latter designation being derived from Rhanmus, a village of Attica, where she had a temple. She was represented in the older times as a young virgin, resembling Venus; in later times, as clothed with the tunic and peplus, sometimes with swords in her hands and a wheel at her foot, a griffin also having his right paw upon the wheel; sometimes in a chariot drawn by griffins. N. is a frequent figure on coins and gems.

NEMOURS, *nĕh-môr'*, Louis Charles Philippe Raphael d'Orléans, Duc de: b. Paris 1814, Oct. 25; d. Versailles 1896, June 26; second son of Louis Philippe, king of France. He received a college education, was engaged in the siege of Antwerp, promoted marshal 1834, served in Algeria 1836-7, and was a great favorite with the soldiers. He became lieutenant-general 1837, married a princess of Saxe-Coburg 1840, and the next year returned to his command in Algeria. On the abdication of the king, 1848, he was, as the oldest living son, entitled to the regency, but fearing that such a course would lead to civil war, he did not press his claims. He aided the royal family to reach England, whither he followed. After the fall of Napoleon III. he was permitted to return to France and take his former rank in the army. He was placed on the list of retired officers 1879.

NEMPNE, v. *nĕm'nē* [AS. *nemnan*, to name]: in *OE.*, to name. Nempt, pt. pp. *nĕmpt*, named.

NE'NA SA'HIB. See Nana Sahib.

NENUPHAR, n. *nĕn'ū-fâr* [F. *nénufar;* It. *nenufar;* Pers. *noūfar*]: the great white water-lily of Europe; the *Nymphæa alba*, ord. *Nymphæā'cĕæ.*

NEO, *nē'ō* [Gr. *neos*, new, fresh, recent]: the first part of many scientific compounds, signifying new; fresh; young; recent.

NEOCOMIAN, n. *nē'ō-kō'mĭ-ăn* [L. *Neocōmŭm*, the Latin name of Neufchatel, in Switzerland]: in *geol.*, a term applied to the Greensand or Lower Cretaceous formation.

NEOCOSMIC, a. *nē'ō-kŏz'mĭk* [Gr. *neos*, new, recent; *kosmos*, the world]: the new or recent world as occupied by man and his works, as distinguished from Paleocosmic, the ancient world, on which the remains of man and his works do not appear.

NEO-CRITICISM: a term applied ordinarily to a revival of the Kantian philosophy, especially the form which was developed in France under men like Renouvier.

NEOGENE, n. *nē'ō-jēn* [Gr. *neos*, new; *genos*, birth, race—*lit.*, new-born]: a term once applied by geologists to designate the Pliocene and Miocene tertiaries.

NE'O-LAMARCK'ISM: the doctrine held by a school of modern naturalists, mainly American, that the results of organic evolution are due mainly to the principles and factors formulated by Lamarck (q.v.), and not mainly to natural selection as asserted by the Darwinians. The modification and expansion of Lamarck's theories, due to enlarged knowledge, constitutes Neo-Lamarckism—a term first applied by Prof. A. S. Packard.

NEO-LATIN, a. *nē'ō-lăt'ĭn* [prefix *neo-;* Eng. *Latin*]: new Latin; term applied to the Romance languages, as having sprung directly from the Latin: also Latin as written by modern authors.

NEOLITE, n. *nē′ō-līt* [Gr. *neos*, new; *lithos*, a stone]: a laminar massive variety of talc, of a brownish or blackish-green color. NEOLITHIC, a. *nē′ŏ-lĭth′ĭk*, belonging to the polished stone age of the early history of man.

NEOLOGY, n. *nē-ŏl′ŏ-jĭ* [Gr. *neos*, new; *logos*, a word. It. *neologia:* F. *néologie*]: introduction or use of new words and phrases into a language; a new system of doctrines at variance with received interpretations of revealed truth; new method of theological interpretation; rationalism. The term was used first in Germany about the middle of the 18th c. to designate the early stages of rationalism, which set forth not so much a denial of the old teachings of Scripture as a new explanation of their bearings, relations, and meaning (see RATIONALISM). NEOLOGIC, a. *nē′ō-lŏj′ĭk*, or NE′OLOG′ICAL, a. *-ĭ-kăl*, pert. to neology. NE′OLOG′ICALLY, ad. *-lĭ*. NEOLOGIST, n. *nē-ŏl′ŏ-jĭst*, an innovator in language or religion; one who holds or introduces new doctrines at variance with received interpretations of revealed religion. NEOL′OGIZE, v. *-jīz*, to introduce new words or new doctrines. NEOL′OGIZING, imp. NEOL′OGIZED, pp. *-jīzd*. NEOLOGISM, n. *-jĭzm*, new words or phrases introduced into language; new views introduced into religion.

NEOPHYTE, n. *nē′ō-fīt* [F. *néophyte*—from Gr. *neophutos*, newly planted—from *neos*, new; *phutos*, grown; *phuton*, a plant, a creature]: a new convert or proselyte to the Christian faith in early times; a novice; a beginner: ADJ. newly entered into an employment.—The word *Neophyte*, in the sense of one recently converted to Christianity, is used by the apostle Paul (I Tim. iii. 6), and is explained by St. Gregory the Great as an allusion to 'their being newly planted in the faith' (Epp. b. v. ep. 51). It differed from Catechumen (q.v.) inasmuch as it supposed the person to have not only embraced the doctrines of the church, but also to have received baptism. The apostle, in the passage referred to, directs Timothy not to promote a N. to be a bishop of a church; and this prohibition was generally maintained as applied to bishops of dioceses, though occasionally disregarded in very extraordinary circumstances, such as those of St. Ambrose (q.v.). The duration of this exclusion was left for a time to the discretion of bishops; but several of the ancient synods legislated regarding it. The third council of Arles, 524, and the third of Orange, 538, fix a year as the least limit of probation. In the modern Rom. Cath. Church the same discipline is observed, and extends to persons converted not alone from heathenism, but from any sect of Christians separated from the communion of Rome. The time, however, is left to be determined by circumstances. The name N. is applied in Roman usage also to *newly-ordained priests*, and sometimes, though rarely, to the *novices* of a religious order.

NEO-PLATONISM, n. *nē'ō-plā'to-nĭzm* [Gr. *neos; Plato*]: eclectic and refined revival of the doctrines of Plato's philosophy, which had its headquarters at Alexandria in the 2d, 3d, 4th, and 5th c. NEO-PLATONIST, n. *-plā'to-nĭst.* The *Neo-Platonists* were an illustrious succession of ancient philosophers who claimed to found their doctrines and speculations on those of Plato. Strictly speaking, however, the Platonic philosophy—that is, in its original and genuine form—expired with Plato's immediate disciples, Speusippus and Xenocrates. Arcesilaus (q.v.) founder of the New Academy, and at a later period Carneades (q.v.) introduced and diffused a skeptical *Probabilism* (q.v.), which gradually destroyed that earnest and reverent spirit of intellectual inquiry characteristic of the great pupil of Socrates. The course of political events in the ancient world also largely assisted in bringing about the same result. The triumphs of the Roman power had been accomplished at the expense of national liberties, and had issued in a general deterioration of moral character, both in the East and in the West. Public men, especially, sought, above all things, material gratifications, and came to look on philosophy itself as only a more exquisite kind of luxury. It was quite natural, therefore, that Skepticism and Eclecticism should become the prevalent forms of philosophy. Besides, the speculations of the older philosophers were felt to be unsatisfactory. When men began to review the long succession of contradictory or divergent systems that had prevailed since the time of Thales the Milesian in the gray dawn of Greek history, a suspicion appears to have sprung up that reality, certainty, truth, was either not attainable, or could be attained only by selecting something from every system. Moreover, the immensely extended intercourse of nations, itself a result of Roman conquest, had brought into closest proximity a crowd of conflicting opinions, beliefs, and practices, which could not avoid an occasional confused amalgamation; and had in this way presented to view a practical eclecticism, less refined and philosophical indeed than the speculative systems of the day, but not essentially different from them. This tendency to amalgamation showed itself most prominently in Alexandria. Placed at the junction of two continents, Asia and Africa, and close to the most cultivated and intellectual regions of Europe, that celebrated city naturally became a focus for the chief religions and philosophies of the ancient world. Here, the East and the West, Greek culture and Oriental enthusiasm, met and mingled; and here, too, Christianity sought a home, and strove to quell, by the liberality of its sympathies, the myriad discords of Paganism. 'Greek Skepticism,' says Mr. Lewes, 'Judaism, Platonism, Christianity—all had their interpreters within a small distance of the temple of Serapis.' It is not wonderful, therefore, that a philosophy, which so distinctly combines the peculiar mental characteristics of the East and the West, as that promulgated by the Neo-

Platonists, should have originated in Alexandria. Yet, it is but right to notice, as does M. Matter in his *Histoire de l'Ecole d'Alexandrie*, that this philosophy soon ceased to have any local connection with the city. Its most illustrious representatives were neither natives of Alexandria nor members of the famous Museum, and had their schools elsewhere—in Rome, in Athens, and in Asia.

It is not easy to say with whom *Neo-Platonism* commenced. Scholars differ as to how much should be included under that term. By some it is used to designate the whole new intellectual movement proceeding from Alexandria, comprising, in this broad view, the philosophy, 1st, of Philo-Judæus and of Numenius the Syrian; 2d, of the Christian Fathers (Clemens Alexandrinus, Origen, etc.); 3d, of the Gnostics; 4th, of Ammonius Saccas and his successors. Others, again, would exclude the second of these (though the Alexandrian divines frequently Platonize); while a third party is disposed to restrict the application of the term to the fourth. The last of these modes of regarding Neo-Platonism is the one most current, and is perhaps the most convenient and definite; yet Bouterwek, Tennemann, Lewes, etc., agree in considering Philo-Judæus (q.v.) an Alexandrian Jew, and (in part) contemporary of Jesus Christ, as the first of the Neo-Platonists—that is to say, as the first who endeavored to unite the mysteries of Oriental belief with the dialectics and speculations of the Platonists. A similar course was at least partially pursued by the Christian Fathers of Alexandria, partly from a predilection for the philosophy in which they had been reared, and partly from a desire to harmonize reason and faith, and to make their religion acceptable to thoughtful and educated pagans; hence, they too may, not without reason, be classed with Philo, though their spirit and aim are distinctively and even strongly Christian. In Gnosticism, on the other hand, speaking generally, the lawless mysticism of the East predominated, and we see little either of the spirit or logic of Plato. They may therefore be dismissed from the category of Neo-Platonists. Regarding Philo-Judæus and the Alexandrian divines, it must be noticed that they wrote and taught in the interests of their own religion, and had no idea of defending or propagating a heathen philosophy. It is this which strikingly distinguishes them from the school founded by Ammonius Saccas; also from an independent group of pagan teachers and authors who likewise flourished in the 1st and 2d c. after Christ, and whose main object was to popularise and diffuse the ethics and religio-philosophic system of Plato, by allegorically explaining the ancient mysteries of the popular belief in harmony with the ideas of their master, but at the same time, blending with these many Pythagorean and Aristotelian notions. The best-known names of this group are Plutarch (q.v.) and Appuleius (q.v.). These men have a better claim to the title of Neo-Platonists than any of the others. They adhered far more closely

to their great master, and were, in fact—to the best of their ability—simply popular expounders of his philosophy. Living at a time when paganism was moribund, they sought to revive, purify, and elevate the faith in which their fathers had lived. Christianity, a young, vigorous, and hostile system, was rooting itself in the hearts of men deeper and deeper every day, and these disciples of Plato—tenderly attached to their ancestral religion—felt that something must be done to preserve from going out the fires that were feebly burning on the altars of the ancient gods.

But these commentators and expositors of Plato were not remarkable for their philosophical power; a fresh stream of life was poured into the old channels of Platonic speculation first by Ammonius Saccas (q.v.) and Plotinus (q.v.), and it is this fact which gives the school which they established its best claim to the exclusive title of *Neo-Platonist*. 'In no species of grandeur was the Alexandrian school deficient,' as M. Saisset justly observes: 'genius, power, and duration have consecrated it. Reanimating during an epoch of decline the fecundity of an aged civilization, it created a whole family of illustrious name. Plotinus, its real founder, resuscitated Plato: Proclus gave the world another Aristotle; and in the person of Julian the Apostate, it became master of the world. For three centuries it was a formidable rival to the greatest power that ever appeared on earth—the power of Christianity; and if it succumbed in the struggle, it only fell with the civilization of which it had been the last rampart' (Lewes's *Biog. Hist. Phil.* 259). The essence of *all* the Alexandrian speculations, that we have stated, consist in the blending of Platonic ideas with Oriental mysticism; the peculiarity of the *Neo-Platonists*, strictly so-called, lies simply in the novelty, audacity, and ingenuity of their reasonings. They aimed at constructing a religion on a basis of dialectics. They strove to attain a knowledge of the Highest, and the way in which they endeavored to accomplish this was by assuming the existence of a capacity in man for passing beyong the limits of his personality, and acquiring an intuitive knowledge of the absolute, the true—that which is beyond and above the fluctuations and dubieties of 'opinion.' This impersonal faculty is called *Ecstasy*. By means of it, man—ceasing, however, it should be observed, to be individual man, i. e., *himself*—can identify himself with the Absolute (or Infinite). Plotinus, in fact, set out from the belief that 'philosophy' (i. e., 'Absolute Truth') is possible only through the identity of the thinker—rather of the subjective thought—with the thing thought of, or the objective thought. This intuitive grasp or 'vision' of the Absolute is not constant; we can neither force nor retain it by an effort of will; it springs from a divine inspiration and enthusiasm, higher and purer than that of poet or prophet, and is the choicest 'gift of God.'

The god of Plotinus and the other Alexandrians is a

mystical Trinity, in the exposition of which they display a dialectical subtlety that even the most ingenious of the schoolmen never reached. The Divine Nature contains within it three Hypostases (Substances); its basis, if we may so speak, is called Unity, also poetically Primitive Light, etc. This Unity is not itself any *thing*, but the principle of all things; it is absolute good, absolute perfection; and, though utterly incapable of being conceived by the understanding, there is that in man that assures him that it—the incomprehensible, the ineffable *is*. 'It has neither quantity nor quality; neither reason nor soul, it exists neither in motion nor repose; neither in space nor time; it is not a numeric unity nor a point; . . . it is pure Esse without Accident; . . . it is exempt from all want or dependency, as well as from all thought or will; it is not a thinking Being, but Thought itself—the principle and cause of all things.' To the skeptic this 'Primitive Light,' we are afraid, will not seem very luminous. From 'Unity,' as the primordial source of all things, emanates 'Pure Intelligence' (*Nous* —the *Vernunft* of modern German metaphysics); its reflection and image, that by which it is intuitively apprehended; from Pure Intelligence, in turn, emanates the 'Soul of the World' (*Psyche tou pantos*), whose creative activity produces the souls of men and animals, and 'Nature;' and finally from Nature proceeds 'Matter,' which, however, is subjected by Plotinus to such refinement of definition that it loses all its grossness. Unity, Pure Intelligence, and the World-Soul thus constitute the Plotinian Triad, with which is connected, as we have seen, the doctrine of an eternal Emanation, the necessity of which he endeavors to demonstrate by the most stringent logic. Human souls, whose source is the Pure Intelligence, are—by some mysterious fate—imprisoned here in perishable bodies, and the higher sort are ever striving to reascend to their original home. So Plotinus, when in the agonies of death, said calmly to his friends: 'I am struggling to liberate the divinity within me.'

The most distinguished pupil of Plotinus was Porphyrius (q.v.), who devoted himself mainly to expounding and qualifying the philosophy of his master. In him we see, for the first time, the presence of a distinctively anti-Christian tendency. Neo-Platonism, which can be properly understood only when we regard it as an attempt to place Paganism on a philosophical basis—to make the Greek religion philosophical, and Greek philosophy religious—did not *consciously* set out as the antagonist of Christianity. Neither Ammonius Saccas nor Plotinus assailed the new faith; but as the new faith continued to grow, and to attract many of the most powerful intellects of the age into its service, this latent antipathy began to show itself. Porphyry wrote against it; Iamblichus (q.v.), the most noted of his pupils, did the same. The latter also introduced a theurgic or 'magical' element into Neo-Platonism, teaching, among other things, that cer-

tain mysterious practices and symbols exercised a supernatural influence over the divinities, and made them grant our desires. Magic is always popular, and it is therefore not wonderful that Iamblichus should have had numerous followers. Ædesius succeeded to his master's chair, and appears to have had also a considerable number of disciples. To the school of one of them Emperor Julian belonged, whose patronage for a moment shed a gleam of splendor over Neo-Platonism, and seemed to promise it a universal victory. After a succession of able, but not always consistent, teachers, we reach Proclus (q.v.), the last great Neo-Platonist, who belongs to the 5th c., a man of prodigious learning, and of enthusiastic temperament, in whom the pagan-religious, and consequently anti-Christian, tendency of the Neo-Platonic philosophy culminated. His ontology was based on the Triad of Plotinus, but was considerably modified in detail; he exalted 'Faith' above 'Science' as a means of reaching the Absolute Unity; was a believer in Theurgy, and so naturally laid great stress on the ancient Chaldæan oracles, Orphic hymns, mysteries, etc., which he regarded as divine revelations, and of which he considered himself—as indeed, he was—the last great 'interpreter.' His hostility to the Christian religion was keen; in its success he saw only the triumph of a vulgar popular superstition over the refined and beautiful theories of philosophy; it was as if he beheld a horde of barbarians defacing the statues and records of the Pantheon. The disciples of Proclus were numerous, but not remarkable for talent. Perhaps the ablest of his successors was Damascius, in whose time Emperor Justinian, by an arbitrary decree, closed the schools of the heathen philosophers. 'The victims,' says Cousin (*Cours d'Histoire de la Philosophie Moderne*), 'of fierce retaliation, and of an obstinate persecution, these poor Alexandrians, after having sought an asylum in their dear East, at the court of Chosroes, returned to Europe A.D. 533, were dispersed over the face of the earth, and the most part extinguished in the deserts of Egypt, which were converted for them into a philosophic Thebais.' See Fichte, *De Philosophiæ novæ Platonicæ Origine* (Berl. 1818); Bonterwek, *Philosophorum Alexandrinorum ac Neo-Platonicorum, recensio accuratior* (Gött. 1821); Matter, *Essai Historique sur l'Ecole d'Alexandrie* (2 vols. Par. 1820); Simon, *Histoire de l'Ecole d'Alexandrie* (2 vols. Par. 1845); Barthélemy St. Hilaire, *De l'Ecole d'Alexandrie* (Par. 1845); Lewes, *Biographical History of Philosophy* (1857); and Ueberweg's *History of Philosophy* (Transl. Morris 1874).

NEO-PYTHAGOREANISM: a philosophical movement which appeared at Alexandria in the first century of our era and which attempted a revival of the Pythagorean mysteries. Its philosophical tenets were those of the late phases of Platonism and it appears to have exercised a definite influence upon Neo-Platonism.

NEOTERIC, n. *nē′ō-tĕr′ĭk* [Gr. *neoterikŏs*, youthful—for *neos*, new]: one of modern times. NE′OTER′IC, a., or NE′OTER′ICAL, a. *-ĭ-kăl*, new; recent in origin; modern.

NEOZOIC, a. *nē′ō-zō′ĭk* [Gr. *nĕŏs*, new; *zōē*, life]: a term in geology, introduced by Edward Forbes to include all the strata from the Trias to the most recent deposits. They are generally divided into the two great groups of Secondary and Tertiary Rocks. This division is, however, quite arbitrary—the chief point of difference depending on the occurrence in the Tertiary deposits of species supposed to be the same as some still living. There is no paleontological nor petralogical break similar to that which exists between the Permian and Trias. Forbes, accordingly, suggested the obliteration of the division between the Secondary and Tertiary series, and the division of all geological time into two epochs—the Paleozoic and the Neozoic.

NEP, n. *nĕp* [L. *nepeta*]: the herb catmint; the *Nepēta catāria*, ord. *Labĭātæ*.

NE′PA AND NEP′IDÆ: see WATER-SCORPION.

NEPAUL, *nĕh-pawl′* or NIPAL, *nē-pâl′*: independent kingdom of Hindustan, on the s. slope of the Himalayas; bounded n. by Thibet, s. and w. by Brit. India, e. by Sikim, a protected state; long. 80° 15′—88° 15′ e.; 500 m. in length, by about 100 m. in average breadth; 55,000 sq. m. The kingdom is separated from the plains of India by the long narrow strip of land along the whole s. border, resembling an English down, but unhealthful, called the Terai. N. of this, and parallel with it, is the great forest of N., 8 to 10 m. broad. N. of this strip is a tract of hilly country, and still n. of that are two tracts of greater elevation, the first of which is mountainous, while the second might be appropriately called Alpine, if it did not comprise peaks, which, like Mount Everest and Dhawalagiri, attain almost twice the elevation of Mont Blanc. The principal rivers are the Kurnalli, the Gogra, the Rapti, the Gunduk with its tributaries, and the Kosi. The climate, most unhealthful in the Terai, is salubrious and pleasant in the hilly and mountainous districts, suggesting that of s. Europe. In the *Valley of N.*—the district surrounding the capital—the heat of Bengal, which is felt in the hollows, may be exchanged for the cold of Russia by ascending the slopes of the hills which inclose it. The soil is extremely rich and fruitful. Barley, millet, rice, maize, wheat, cotton, tobacco, sugar-cane, pine-apple, and various tropical fruits are cultivated. Gold has not been found, but iron and copper mines are worked. The inhabitants are of numerous races, but consist mainly of two tribes—the Ghurkas, whose chief occupation is war, and the Newars, principally artisans. Trade is extensive. Education is in a low state. The literature of N. of the present time is frivolous and worthless; but there are rich remains from the ancient Sanskrit. The govt. is a despotism. The religion is a Buddhism, modified by Hinduism. The cap. is Khatmandu (q.v.).—Pop. of N. (1876) estimated 3,000,000.

NEPENTHACEÆ, n. plu. *nē-pĕn-thā'sē-ē* [Gr. *nēpĕnthēs*, removing all care, epithet of an Egyptian drug—from *ne*, not; *penthos*, grief, sadness]: the pitcher-plant family, an order of plants, having alternate leaves slightly sheathing at the base, and having a foliaceous petiole which forms an ascidium at its extremity, with the lamina in the form of a lid. NEPEN'THES, n. *-thēz*, only known genus of the nat. order of exogenous plants called *Nepenthaceæ*, consisting of herbaceous or half-shrubby plants with diœcious flowers, natives of swampy ground in India and China, remarkable chiefly for their leaves. Each leaf consists of a dilated foliaceous petiole, prolonged beyond its foliaceous part, as if it were the prolongation of the midrib of a leaf, and terminating in a

Pitcher Plant (*Nepenthes distillatoria*).

pitcher (*ascidium*), from which the name PITCHER PLANT has been generally given to the species of this order. The pitcher is terminated by a lid, which is regarded as the true blade of the leaf. The fluid found in these pitchers is a secretion of the plant itself. Insects often enter the pitcher, and are apparently there dissolved and absorbed; so that the N. would rank among the plants called 'Insectivorous' by Darwin. Pitcher plants (N. Amer.) are of a different family: see SARRACENIA.

NEPENTHE, n. *nē-pĕn'thĕ* [Gr. *nēpenthēs*—from *ne*, not; *penthos*, grief, sadness]: in *anc. Greece*, a magic potion or drug supposed to cause persons to forget their sorrow and misfortunes. Its invention was ascribed to the Egyptians; and in Homer, Helen of Troy appears as acquiring from them the art of compounding it, which was a secret. According to Diodorus Siculus the women of Thebes knew the secret. By some it is supposed to have been a preparation of opium.

NEPHELINE, *nĕf'ĕ-lēn* or *-lĭn*, or NEPHE'LITE, *-līt:* mineral appearing in columnar crystals, with 6 or 12 sides, sometimes with a pyramidal point, transparent when in small pieces, but in large blocks varying in color from a green tint to a brick red. It is a silicate of alumina and soda with traces of carbon and a little potash. It closely resembles the felspars, and in some volcanic rocks almost entirely takes their place. It was found first at Somma, near Vesuvius, 1797. It appears in the form of grains or crystals in volcanic rocks and of large crystals in metamorphic rocks. In the latter form it has an oily appearance, and is often called eleolite. This is found in various combinations, in Litchfield, Me.; at Salem, Mass.; in the Ozark Mountains, Ark.; and in some of the rocks of Norway. The name of N., from a Greek word meaning a cloud, was given this mineral by Haüy, 1801, on account of its presenting a cloudy appearance when placed in acid.

NEPHEW, n. *nĕf'ū* [F. *neveu*—from L. *nepōtem*, a grandson, a descendant: Scot. *nevoy*, a nephew; Lap. *napat*, a sister's son: Skr. *napát*, a grandson, nephew]: the son of a brother or sister; fem. *niece*.

NEPHRIA, n. *nĕf'rĭ-ă* [Gr. *nephros*, a kidney]: Bright's disease of the kidneys. NEPHRITIC, a. *nĕ-frĭt'-ĭk*, or NEPHRIT'ICAL, a *-ĭ-kăl*, affected with disease of the kidneys. NEPHRIT'IC, n. a medicine for the cure of disease in the kidneys. NEPHRITIS, n. *nĕf-rī'tĭs*, inflammation of the kidneys. NEPHROID, a. *nĕf'royd* [Gr. *eidos*, resemblance]: resembling a kidney in form and structure. NEPHROTOMY, n. *nĕ-frŏt'ŏ-mĭ* [Gr. *tomē*, a cutting]: the operation of extracting a stone from the kidney.

NEPHRITE, n. *nĕf'rīt* [Gr. *nephritis*, a disease of the kidneys, from Gr. *nephros*, kidney]. The softer of the two minerals classed as JADE (which see). It is also as *Lapis nephriticus*, and *nierenstein* from the belief that wearing it in some form was a remedy for diseases of the kidneys. It is a fibrous or cryptocrystalline variety of hornblende, has a splintery fracture like horn, and is tougher, if anything, than jadeite. This toughness adds to the difficulty of working it, but combined as it is with a fair degree of hardness adapted it for cutting implements of primitive man, and many such artefacts have been unearthed even in regions where raw nephrite is not now found, if ever, The names *beilstein* or *Axestone* (which date from the time of Captain Cook's discovery of New Zealand, then in its stone age) have also been applied to it. In historic times it has been used chiefly for ornaments, sword handles (as in Turkey and Persia), and the like, and for finely carved and sculptured vases and the like, as in China and India. It is more abundant and more widespread than jadeite (q.v.). A large block of nephrite weighing 2,150 kilos, found by Dr. Kunz at Tordansmuhl, was brought to New York and placed in the Bishop collection.

NE PLUS ULTRA, phrase *nē plŭs ŭl'tra* [Lat. no further]: furthest point possible to be reached in anything.

NE'POMUC: see JOHN OF NEPOMUK.

NEPOS, *Nē'pŏs*, CORNELIUS: Roman historian: b. prob in Verona, B.C. 1st c., though nothing is known of his life. He was friend of Cicero and Catullus. The only work of N.'s which has survived (if indeed it be his) is a series of 25 generally brief biographies of warriors and statesmen, mostly Greeks. These biographies are distinguished by the purity of their Latinity, the conciseness of their style, and their admirable exhibition of character; but sufficient care has not been exercised in examination of authorities, nor is the relative importance of things duly regarded. Until the middle of the 16th c., these biographies, on the strength of the titles given in the various MSS., were generally ascribed to Æmilius Probus, a writer who lived in the latter part of the 4th c.; but an edition was put out 1569 by the famous Dionysius Lambinus, who pronounced the so-called *Lives* of Æmilius Probus to be in reality the lost work of Cornelius Nepos, *De Viris Illustribus*. His weightiest argument is drawn from the excellence of the Latin, and the chastity of the style, so unlike the corrupt and florid language of the Decline. Many critics hold that these Lives ought to be regarded as an abbreviation of the work of N. by Probus. This hypothesis is not without its difficulties, but it is perhaps the least objectionable of any, and the one preferred by the majority of scholars. There are many editions, among which are those of Van Staveren (Leyd. 1773), of Tzschucke (Gött. 1804), and of Bremi (Zur. 1820); and the book is in general use as a school-book. It has been very frequently translated into English and other languages.

NEPOTISM, n. *nĕp'ŏ-tĭzm* or *nē'pō-tĭzm* [F. *népotisme*; It. *nepotismo*—from L. *nepōtem*, a grandson, a nephew]: undue preference or favoritism shown to relatives, especially in the public service.

NEPTUNE, n. *nĕp'tūn* [L. *Neptūnus*, in *anc. myth.*, the god of the sea]: remotest known planet of our solar system (see PLANETS). NEPTUNIAN, a. *nĕp-tū'nĭ-ăn*, pert. to the sea; formed by water—now applied to the stratified rocks only. NEPTUNIAN THEORY, old name for the theory which referred the formation of all rocks and strata to the agency of water. NEPTU'NIAN, n. *nĭ-ăn*, or NEP'TUNIST, n. *-tū-nĭst*, one who supports the neptunian theory, i.e., the aqueous as against the igneous theory of the origin of rocks.

NEPTUNE, *nĕp'tūn:* ancient Roman god of the sea. It is doubtful whether he was originally a marine deity, for the old Italians were the opposite of a maritime people; yet his name is commonly connected with *nato*, to swim; hence at an earlier period he may have borne another designation, afterward forgotten. When the Romans became a maritime power, and had grown ac-

quainted with Grecian mythology, they, in accordance with their usual practice, identified N. with the Greek god whom he most resembled. This was *Poseidōn*, also *Poteidan* (connected with *potos*, a drink, *pontos*, the sea, and *potamos*, a river.) Poseidon appears in his most primitive mythological form as the god of water in general, or the fluid element. He was son of Cronos (Saturn) and Rhea, and brother of Jupiter. On the partition of the universe among the sons of Cronos, he obtained the sea as his portion, in the depths of which he had his palace near Ægæ, in Eubœa. Here also he kept his brazen-hoofed and golden-maned steeds, in a chariot

Neptune.

drawn by which he rode over the waves, which grew calm at his approach, while the monsters of the deep, recognizing their lord, made sportive homage round his watery path. But he sometimes presented himself at the assembly of the gods on Olympus, and in conjunction with Apollo, built the walls of Troy. In the Trojan war he sided with the Greeks; nevertheless he subsequently showed himself unfriendly to the great sea-wanderer Ulysses, who had blinded his son Polyphemus. He was believed also to have created the horse, and taught men its use. The symbol of his power was a trident, with which he raised and stilled storms, broke rocks, etc. According to Herodotus, the name and worship of Poseidon came to the Greeks from Libya. He was worshipped in all parts of Greece and s. Italy, especially in the seaport towns. The Isthmian games were held in his honor. Black and white bulls, boars, and rams were offered in sacrifice to him. N. was commonly represented with a trident, and with horses or dolphins, often together with Amphitrite, in a chariot drawn by dolphins, and surrounded by tritons and other sea-monsters. As befitted the fluctuating element over which he ruled, he is figured sometimes asleep or reposing, and sometimes in a state of violent agitation.

NERBUDDAH, *nĕr-bŭd′da:* river of Hindustan, rising in the Vindhya Mts., 3,000 to 4,000 ft. above sea-level, lat. 22° 40′ n., long. 81° 52′ e. It flows w., past Jabalpur (190 m. from its source), where the great depression between the Vindhya Mts. on the n. and the Satpura Mts. on the s., known as the Valley of the N., begins. The other principal towns on its banks are Hoshangabad, Burwani, and Barneh. At Hoshangabad it is 900 yards wide, and five to six ft. in depth. At Barneh it begins to expand into a wide estuary, and after flowing 30 m. further, it falls into the Gulf of Cambay. Entire length about 800 m., of which 55 m. are navigable for ships of considerable size.

NERCHINSK, *nĕr-chĭnsk′:* important mining town of Russia, e. Siberia, in the Trans-Baikal Territory, on the Nercha, tributary of the Shilka; lat. 51° 58′ n., long. 116° 35′ e., 4,707 m. from St. Petersburg. It was founded 1658. The dist. of which N. is centre yields considerable gold yearly, with large quantities of silver, lead, and iron, and precious stones. The only tin-mines in the empire are worked here. The soil in the vicinity is fertile, and the climate mild and agreeable. Pop. about 7,000.

NEREID, n. *nē′rē-ĭd* [Gr. *Nērĕis* or *Nērĕida*, a nymph of the sea]: one of the sea nymphs who were constant attendants upon Neptune; fabled to be the 50 daughters of Nereus, a sea-god, son of Pontus and Gê. None of the Nereids have an individual character except Thetis (q.v.), Amphitriti (q.v.)., and Galatea. NEREIDES, plu. *nē-rē′ĭdēz* or *nē-rē′ĭds*, a living family of sea-worms: see NEREIS. NEREITES, n. plu. *nē′rĕ-īts*, fossil tracks of marine worms, occurring in Silurian and other strata. The name was given first to a hypothetical genus to which were supposed to pertain the fossil remains of an annelid from Silurian rocks; but as no basis was found for such a supposed genus, the term N. took its present meaning. The track or trail thus named occurs on the surface of the laminæ of fine shales, over which, when it was soft, the creature moved, leaving a long and tortuous trail, which is generally found to terminate in a more defined representation produced apparently by the body itself, although every trace of it has disappeared. See ICHNOLOGY, fig. 2. NERITE, n. *nē′rīt*, a univalvular shell-fish of the genus NERITA, *nĕ-rī′tă*

NERO, n. *nē'rō*, in the expression A NERO [*Nero*, Roman emperor, A.D. 54–68, infamous for his oppression and cruelties]: any bloody, relentless tyrant; one in power noted for extreme barbarity and savagery.

NERO, *nērō*, Roman Emperor: A.D. 37, Dec. 15—68, June 9 (reigned 54–68); b. Antium, on the coast of Latium; son of Cn. Domitius Ahenobarbus and of the younger Agrippa (q.v.), daughter of Germanicus Cæsar, and sister of Caligula. His mother becoming wife of Emperor Claudius, Claudius adopted him, A.D. 50, and his name, originally L. Domitius Ahenobarbus, was changed to Nero Claudius Cæsar Drusus Germanicus. After the death of Claudius, A. D. 54, his mother's daring and intrigue which had long been in exercise for his elevation to the throne, came to a successful issue; the Prætorian Guards, at the instigation of Afranius Burrhus, their prefect, declared him emperor, instead of Claudius's son Britannicus, and their choice was acknowledged both by the senate and the provinces. If the authorities may be trusted, the death of Claudius was by poison administered by the orders of his wife. His reign began with the semblance of moderation and good promise, under the guidance of Burrhus and his tutor Seneca the philosopher; and the first 5 years were called Nero's golden years; but the baleful influence of his mother, together with his own moral weakness and sensuality, frustrated their efforts, and he soon plunged headlong into debauchery, extravagance, and tyranny. He caused Britannicus, son of Claudius, to be treacherously poisoned at the age of 14, because he dreaded him as a rival, and afterward, A.D. 59, caused his own mother Agrippina (with whom he was latterly on bad terms) to be assassinated, to please his mistress Poppæa Sabina (wife of his principal boon companion Otho, afterward emperor), in order to marry whom he also divorced and afterward put to death his wife Octavia (aged 20), sister of Britannicus. N.'s mother had set her imperious will that knew not how to yield, against the will of the emperor—that in ruling him she might rule Rome. One of these savage natures must have destroyed the other, and the final power was in N.'s hands. The low servility into which the Roman senate had sunk at this time, may be estimated from the fact that it actually issued an address congratulating the hateful matricide on the death of Agrippina. N. himself, on the other hand, confessed that he was ever haunted by the ghost of his murdered mother. The affairs of the empire were at this time far from tranquil. In A.D. 61, an insurrection broke out in Britain under Queen Boadicea, which was, however, suppressed by Suetonius Paulinus. The following year saw an unsuccessful war against the Parthians in Armenia. At home, matters were not much better. The emperor was lampooned in verse; the senate and priesthood, alike venal, also were satirized by audacious malcontents; Burrhus, a valuable friend, died; and even Seneca, though not a great moralist out of his books, thought it

NERO PERSECUTING THE CHRISTIANS.

only decent to remove from court. In 64, July, a great conflagration in Rome reduced two-thirds of the city to ashes. N. himself is usually believed to have been the incendiary. It is said that he admired the spectacle from a distance, reciting verses about the burning of Troy, but many scholars are doubtful whether he really had any hand in it. At all events he laid the blame on the Christians—that mysterious sect, which, like the Jews, in the middle ages, were the cause of all otherwise inexplicable calamities—and persecuted them with great fury. Moreover, he rebuilt the city with great magnificence, and reared for himself on the Palatine Hill a splendid palace, called, from the immense profusion of its golden ornaments, the *Aurea Domus*, or Golden House; and in order to provide for this expenditure, and for the gratification of the Roman populace by spectacles and distributions of corn, Italy and the provinces were unsparingly plundered. A conspiracy against him failed A.D. 65, and Seneca and the poet Lucan fell victims to his vengeance. In a fit of passion he murdered his wife Poppæa, by kicking her when she was pregnant. He then proposed marriage to Antonia, daughter of Claudius, but was refused; whereupon he caused the too fastidious lady to be put to death, and married Statilia Messallina, after killing her husband. He also put to death or banished many persons distinguished for integrity and virtue. His vanity led him to seek distinction as a poet, a philosopher, an actor, a musician, and a charioteer, and he received sycophantic applauses, not only in Italy, but in Greece, to which, on invitation of the Greek cities, he made a visit in 67, entering as a competitor in the Grecian games and contests. But in 68, the Gallic and Spanish legions, and after them the Prætorian Guards, rose against him to make Galba emperor, and N. fled to the house of a freedman, Phaon, about four m. from Rome. The senate, which had been most subservient, declared him an enemy of his country, and the tyrant ended his life by suicide. This wretch had a taste for poetry, and was skilful in painting and modelling. The Roman populace, fascinated by his splendor, luxury, and extravagance, refused to credit his death, and long expected his re-appearance. The Roman men of letters, whose friends he had murdered, set him forth in literature as a monster of evil; and these writers, combined with the Christians whom he had so terribly persecuted, to make his name the synonym of violent and fiendish wickedness—a type of the infernal; indeed, a form of the mysterious Anti-Christ who was to re-appear for the last great struggle of the powers of darkness with the kingdom of Christ.

NEROLI, n. *nĕr'ŏ-lĭ* [F. *néroli*]: the essential oil of orange-flowers. NEROLI CAMPHOR, n. in *chem.*, the camphor of orange-flowers, obtained by adding alcohol of 90 per cent. to neroli oil. It is insoluble in water and absolute alcohol, soluble in ether, melting at 50°.

NERVA, *nėr′va*, MARCUS COCCEIUS: Roman Emperor: A.D. 32–98, Jan. 27 (reigned 96–98); of a family belonging to Narnia, in Umbria. He twice held the honor of consulship before his election to the dignity of emperor after the murder of Domitian. He showed much wisdom and moderation, rectified the administration of justice, and diminished the taxes; but finding himself, at his advanced age, not vigorous enough to repress the insolence of the Prætorian Guards, he adopted, as son and successor, M. Ulpius Trajanus, then at the head of the army of Germany, who succeeded him on his death. After his decease, divine honors were rendered to him by his successor.

NERVE, n. *nērv* [L. *nervus;* Gr. *neuron*, a sinew, a nerve, the string of a bow: It. *nervo:* F. *nerf*]: one of the network of gray fibrous cords which are carried from the brain as their centre to all parts of the body, forming the organs of sensory and motor impulses (see NERVOUS SYSTEM): *fig.*, fortitude; strength; firmness of mind or body; courage; manliness; in *bot.*, one of the fibrous bundles of the combined vascular and cellular tissue ramifying through leaves, etc., like veins or nerves in the animal structure: V. to give strength or vigor to; to strengthen. NERVING, imp. NERVED, pp. *nėrvd.* NERVE′LESS, a. without strength or nerve. NERVINE, n. *nėr′vĭn*, anything that affects the nerves: ADJ. good for the nerves. NERVOUS, a. *nėr′vŭs* [F. *nerveux*, sinewy—from L. *nervōsus*, full of nerve—*lit.*, sinewy]: relating to the nerves; having the nerves affected; easily agitated; marked by strength in sentiment or style, as a writer; in *bot.*, full of nerves; having the nerves prominently developed. NER′VOUSLY, ad. *-lĭ.* NER′VOUSNESS, n. *-nĕs*, the state or quality of being nervous; weakness or agitation of the nerves. NERVURES, n. plu. *nėrv′ūrz* [F. *nervure*, nerve or band]: the veins of leaves; the horny tubes which expand the wings of insects. NERVATION, n. *nėr-vā′shŭn*, in *bot.*, the character or disposition of the nerves of a leaf or other foliaceous appendage. NERVE-CELL (see CELL-THEORY: HISTOLOGY). NERVOUS SYSTEM, the nerves spread over the body taken collectively, the office of which is to connect the organs of sense, and muscles, etc., with the brain (see below). NERVOUS TEMPERAMENT, a condition of body-generally characterized by thin skin, small muscles, quickness of motion, and a great excitability of the nervous system: see TEMPERAMENT.

NERVOUS SYSTEM, The: term describing collectively the nerves spread over the body in all except the lowest classes of animals. In all *vertebrated animals* the nervous system is composed of two distinct portions or systems—viz., the *cerebro-spinal* and the *sympathetic* or *ganglionic*.

The *cerebro-spinal system* includes the brain and spinal cord (which form the *cerebro-spinal axis*), and the cranial and spinal nerves. It was termed by Bichat the nervous system of animal life, and comprises all the nervous organs concerned in sensation, volition, and mental action.

The *sympathetic system* consists essentially of a chain of ganglia connected by nervous cords, extending from the cranium to the pelvis, along each side of the vertebral column, and from which nerves with large ganglionic masses proceed to the viscera and blood-vessels in the cavities of the chest, abdomen, and pelvis. It was termed by Bichat the nervous system of organic life, since it seems to regulate—almost or quite independently of the will—the due performance of the functions of the organs of respiration, circulation, and digestion.

For the essential parts of the *cerebro-spinal axis*, see Brain: Cerebrum and Cerebellum: Spinal Cord. The brain and spinal cord are covered and protected by three membranes or *meninges*, as they are frequently termed—viz., the *dura mater*, the *arachnoid*, and the *pia mater*. The *dura mater* is a strong fibrous membrane, which supplies the cranial bones with blood in early life, and adheres firmly to their inner surface. It is less closely attached to the bony walls of the spinal canal. Inside the cranium it gives off processes (such as the *falx cerebri*, *tentorium cerebelli*, and *falx cerebelli*) which divide and support different parts of the brain; it gives a strong fibrous sheath to every nerve; and by splitting into two layers at certain points, it forms receptacles for venous blood, which are termed Sinuses (q.v.). The *arachnoid* (so called from its being supposed to be as thin as a spider's web) is a serous membrane, and, like all serous membranes, is a closed sac, consisting of a parietal and a visceral layer. The parietal layer adheres to the inner surface of the *dura mater*, to which it gives a smooth, polished appearance: while the visceral layer somewhat loosely invests the brain and spinal cord, from direct contact with which, however, it is separated by the intervention of the *pia mater* and some loose areolar tissue. In most regions there is an interval between the visceral layer of the *arachnoid* and the *pia mater*, which is called the *sub-arachnoid cavity*, and is filled during life by the *cerebro-spinal fluid*. This fluid, which varies in quantity from two to ten ounces, keeps the opposed surfaces of the arachnoid in close contact, and affords mechanical protection to the nervous centres which it surrounds, and guards them against external shocks. It is

accumulated in considerable quantity at the base of the brain, where it serves for the protection of the large vessels and nerves situated there. In fracture of the base of the skull, the draining away of this fluid, often in very large quantity, through the external auditory meatus, is often one of the most significant symptoms. The *pia mater* is the immediate investing membrane of the brain and spinal cord. This membrane consists of minute blood-vessels, held together by an extremely fine areolar tissue. It dips down between the convolutions and fissures of the brain, and is prolonged into the interior, forming the *velum interpositum* and the choroid plexuses of the fourth ventricle. It is by means of this membrane that the blood-vessels are conveyed into the nervous substance.

The nerves connected with the cerebro-spinal centre or axis are described usually in two classes—the *spinal* and the *cranial* or *encephalic*. The former class consists of all those which arise from the spinal cord, and emerge from the spinal canal through the intervertebral foramina; while the latter includes those which arise from some part of the cerebro-spinal centre, and emerge through foramina in the cranium or skull.

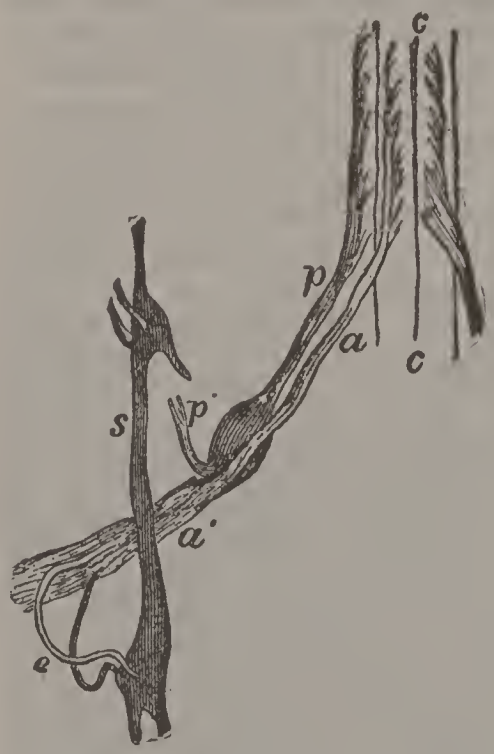


Fig. 1.—Roots of a Dorsal Spinal Nerve, and its union with the Sympathetic:

c, c, anterior fissure of the spinal cord; *a*, anterior root; *p*, posterior root with its ganglion; *a'*, anterior division of branch; *p'*, posterior branch; *s*, sympathetic; *e*, its double junction with the anterior branch of the spinal nerve by a white and a gray filament, the respective natures of which are subsequently described. — From Todd and Bowman.

The *Spinal Nerves* (exclusive of the spinal accessory nerve, which, from the fact that it emerges from the skull, is ranked usually among the cranial nerves) are 31 on either side, there being a pair for each pair of intervertebral foramina (for whose formation see SKELETON; SPINAL COLUMN), and for the foramina between the atlas (the first or highest vertebra) and the occipital bone at the base of the skull. Every spinal nerve arises from the cord by two roots, an anterior and a posterior, of which the latter is distinctly the larger. Each root passes

out of the spinal canal by a distinct opening in the dura mater. Immediately after its emergence, a ganglion is seen on the posterior root, and in the anterior surface of this ganglion the anterior root lies embedded. Just beyond the ganglion, but not at all previously, the nervous fibres of both roots intermingle, and a compound nerve results. The trunk thus formed separates immediately after it has passed through the intervertebral canal into two divisions—the anterior and posterior—each of which contains filaments from both roots, possessing, as shown below, entirely different functions. These divisions, of which the anterior is considerably the larger, proceed to the anterior and posterior parts respectively, of the body, and are distributed to the skin and the muscles. The anterior branch communicates with the sympathetic nerve, as shown in the figure. For the mode of connection of the roots of the nerves with the cord, see SPINAL CORD. These nerves are arranged in classes, according to the regions of the spine in which they originate; hence we speak of eight cervical, twelve dorsal, five lumbar, and six sacral nerves on either side.

The discovery of the separate functions of the anterior and posterior roots of the spinal nerves was made by Sir Charles Bell, though there is reason to believe that Magendie, without any knowledge of Bell's experiments, arrived at similar conclusions at nearly the same time. The anterior root of each spinal nerve is *motor*, and the posterior *sensory* in function. (In place of the terms *sensory* and *motor*, the terms *afferent* and *efferent* are now frequently used. The functions of the nerves being to establish a communication between the nervous centres and the various parts of the body, and *vice versâ;* an *afferent* nerve communicates the impressions made upon the peripheral nervous ramifications to the centres, while an *efferent* nerve conducts the impulses of the nervous centres to the periphery.)

The *cranial nerves*, though 12 in number on either side, were arranged by Willis, whose system was for a long time generally followed, into nine pairs, which, taken from before backward in the order in which they are transmitted through the foramina at the base of the skull, stand as follows: (1) Olfactory; (2) optic; (3) motor oculi or oculomotor; (4) pathetic; (5) trifacial; (6) abducens; (7) portio dura or facial, portio mollis or auditory; (8) glossopharyngeal, par vagum or pneumogastric, spinal accessory; (9) hypoglossal.

The cranial nerves are now numbered and named as twelve, viz.: (1) Olfactory; (2) optic; (3) oculomotor; (4) trochlear or pathetic; (5) trigeminal or trifacial; (6) abducens; (7) facial; (8) auditory; (9) glossopharyngeal; (10) pneumogastric or vagus; (11) spinal accessory; (12) hypoglossal. They may be subdivided into three groups, according to their functions, viz.: *Nerves of Special Sense*—the olfactory (see NOSE),

optic (see EYE), and auditory (q.v.); *Nerves of Motion,* or *Efferent Nerves*—the motor oculi, pathetic, abducens, facial, and hypoglossal; and *Compound Nerves*—the trifacial, glossopharyngeal, pneumogastric, and spinal accessory.

The reason why no nerve of taste is included in the above arrangement among the nerves of special sense will be subsequently seen; and we proceed briefly to notice the functions of the motor cranial nerves.

The 3d, 4th, and 6th pairs—the *motor oculi, pathetic,* and *abducens*—together make up the apparatus by which the muscles of the orbit (the four recti, the superior and inferior oblique, and the levator palpebræ) are called into motion. See EYE.

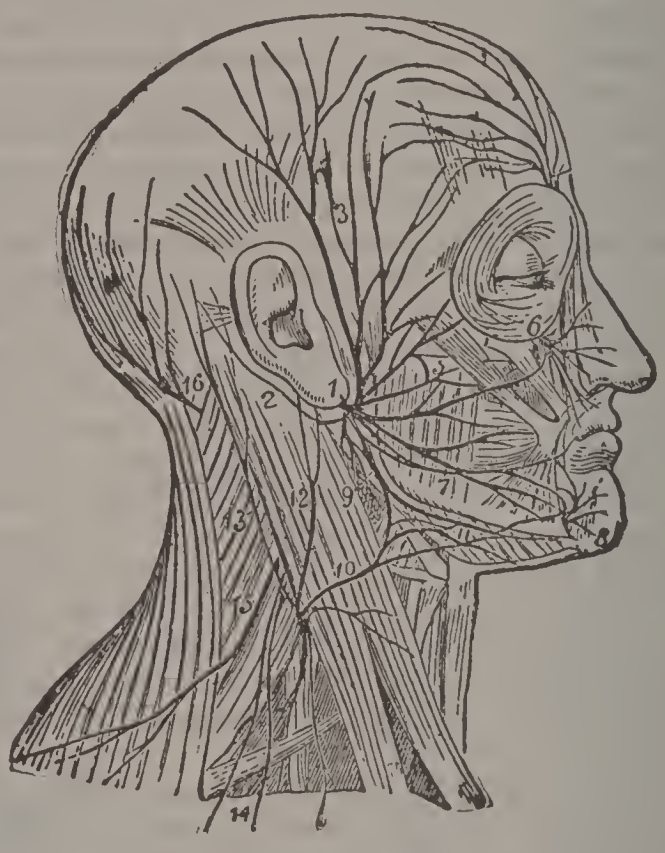


Fig. 2.—Distribution of the Facial Nerve and of the Branches of the Cervical Plexus:

1, the facial nerve at its emergence from the stylo-mastoid foramen: 3, temporal branches communicating with (4) the frontal branches of the fifth or trifacial nerve: 5, infra-orbital branches communicating with (6) the infra-orbital branches of the fifth nerve: 7, maxillary branches communicating with (8) the mental branch of the fifth nerve: 9, cervico-facial branches: 15, the spinal accessory nerve, giving off a branch to the trapezius muscle.

The *Facial Nerve* (or the *Portio Dura* of the 7th pair of Willis) is divisible into three stages. The first stage is the intercranial, from its origin to its exit from the cranial cavity, in association with the *portio mollis,* or *auditory nerve* (q.v.), at the internal auditory meatus. The second stage is contained in the *aqueduct of Fallopius,* a bony canal lying in the petrous portion of the temporal bone; in this stage it anastomoses with other

nerves, and thus *sensory* fibres are introduced into it from the 5th pair and other sources, which make irritation of some of its branches to cause pain. The third stage commences with the emergence of the nerve through the stylo-mastoid foramen. The nerve now lies in the parotid gland (not shown in the figure), and after giving off the *posterior auricular,* and a few smaller branches, finally divides into the *temporal, facial,* and *cervical* branches (see 3, 5, and 9 in fig. 2). This diverging distribution of the nervous branches over the face forms the *pes anserinus* of the older anatomists, from the supposed resemblance to the expanded foot of a goose. Careful dissection of this nerve shows that the great majority of its fibres are distributed to muscles; and indeed, if

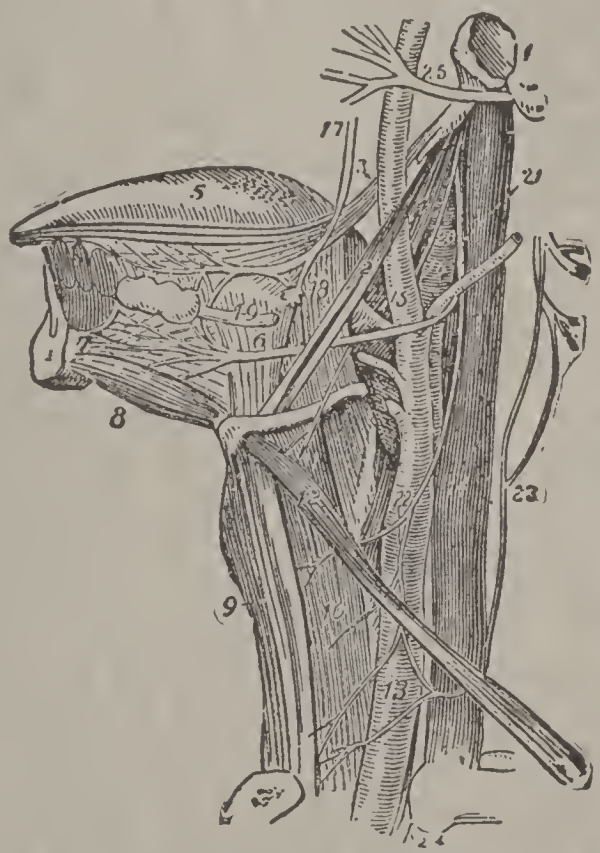


Fig. 3.—This figure illustrates the Anatomy of the Side of the Neck, and shows, *inter alia,* the Nerves going to the Tongue:

1, portion of temporal bone, showing the external auditory meatus and mastoid and styloid processes: 5, the tongue: 13, the common carotid artery: 14, the internal jugular vein: 15 and 16, the external and internal carotids: 17, the gustatory branch of the fifth nerve: 20, the glosso-pharyngeal nerve: 21, the hypoglossal nerve: 22, the descendens noni: 24, the pneumogastric nerve, lying between the carotid artery and the jugular vein: 25, the facial nerve.

we except the muscles of mastication, which receive their motor power from the 3d division of the 5th pair, this may be regarded as the general motor nerve of the face. The muscles which are supplied by the facial nerve are chiefly those on which the aspect of the countenance and the balance of the features depend. The power of clos-

ing the eyelids depends on this nerve, as it alone supplies the orbicularis palpebrarum; likewise the power of frowning, from its influence upon the corrugator supercilii. Anatomy indicates that this nerve is the motor nerve of the superficial muscles of the face and ear, and of the deep-seated muscles within the ear. This conclusion is abundantly confirmed by comparative anatomy. For wherever the superficial muscles of the face are well developed, and the play of the features is active, this nerve is large. In monkeys it is especially so. That extremely mobile instrument, the elephant's trunk, is provided with a large branch of the facial as its motor nerve. In birds, on the other hand, it is very small.

Before Sir Charles Bell began his experiments on the functions of the nerves, it was believed that the facial was the nerve of sensibility of the face, and it was on several occasions divided with the view of relieving tic-douloureux, of which it was supposed to be the seat. But the operation, of course, yielded no relief, and always inflicted a permanent injury, since it was succeeded by paralysis of the facial muscles, with total loss of control over the features and over the closing of the eye, on the side on which the operation was performed.

The *hypoglossal nerve* [from Greek word *hypo*, under; *glotta*, the tongue] escapes from the cavity of the skull by the anterior condyloid foramen, and passes outward and forward around the pharynx to the interior surface of the tongue, where it breaks up into its terminal branches, which supply the muscular structure of that organ with motor power. This nerve communicates with the pneumogastric nerve, with the sympathetic (by branches derived from the superior cervical ganglion), and with the cervical plexus, soon after its emergence from the cranium; and subsequently, as it curves round the occipital artery (see fig. 3), it gives off the long anastomosing branch known as the *descendens noni*.

Experiments on living animals, comparative anatomy, and pathological investigations, alike indicate that this is the motor nerve of the tongue. In cases of paralysis of this nerve, the power of articulation is much injured or totally destroyed; and this is often one of the first symptoms which lead the physician to apprehend serious cerebral lesion.

Concerning the *Compound Nerves*, it is to be noted that the *trifacial* or *fifth nerve*, as was pointed out first by Sir Charles Bell, presents a remarkable resemblance to the spinal nerves in its mode of origin; for it arises by two roots, one large and the other small, and on its larger root, as on the posterior and larger root of the spinal nerves, is a distinct ganglion; the two roots being quite distinct until after the formation of the ganglion, when the lesser one coalesces with the lowest branch, which emerges from the ganglion to form the inferior maxillary nerve. This ganglion, known as the Gasserian ganglion, and formed on the larger root of the nerve,

lies upon the upper surface of the petrous portion of the temporal bone, and is of somewhat triangular form, with its base directed forward and outward. From this base proceed three nerves—the ophthalmic, on the inside; the superior maxillary, in the middle; and the inferior maxillary externally. The first two of these nerves consist exclusively of fibres from the ganglionic root, while the third—the inferior maxillary—is composed of fibres from both roots, and is therefore a compound nerve. From the mode of distribution, as well as from the mode of origin, it is inferred that the ophthalmic and superior maxillary are purely sensory, while the inferior maxillary is a motor and sensory nerve. (Of this complicated nerve, the frontal branch of the ophthalmic division is shown in fig. 2, No. 4; while the infra-orbital branches of the superior maxillary division, and the mental branches of the inferior maxillary divisions, are shown in Nos. 6 and 8; while the gustatory or lingual branch of the last-named division is shown in fig. 3, No. 17; the nasal branches are shown in one of the diagrams illustrating NOSE.) Division of the ophthalmic or of the superior maxillary nerve, induces loss of sensibility without any serious impairment of muscular power; but when the inferior maxillary nerve, on either side, is divided, the power of mastication is destroyed on that side, and the sensibility of the tongue and of the lower part of the face on that side is lost.

The lingual or gustatory branch of the inferior maxillary is distributed to the mucous membrane and papillæ at the fore part and sides of the tongue, where it acts as a nerve both of common sensibility and of taste. (For the consideration of the respective parts which this nerve and the glossopharyngeal play in the sense of taste, see TONGUE; SENSE OF TASTE.)

The trifacial nerve is the seat of the affection known as tic-douloureux (see NEURALGIA). It is in the dental branches of this nerve that toothache is situated; and in the process of teething in young children, the irritation of these branches, consequent on the pressure of the teeth, often gives rise to convulsions, by being conveyed to the medulla oblongata, and exciting motor nerves by reflex action.

The *glossopharyngeal nerve* is principally an afferent or sensory nerve, but has a small motor root. It escapes from the cranium in association with the pneumogastric and spinal accessory nerves, through the same foramen as that through which the jugular vein emerges. It then descends by the side of the pharynx, and after anastomosing with the facial and pneumogastric nerves, and giving off a branch to the tympanum of the ear, terminates in branches to the mucous membrane of the base of the tongue, of the palate, tonsils, and pharynx, and in twigs to the digastric and stylopharyngeal muscles; so that its distribution is almost entirely to sentient

surfaces (see fig. 3, No. 20). According to Todd and Bowman, it is the sensitive nerve of the mucous membrane of the fauces and of the root of the tongue, and in the latter situation it ministers to taste and touch, as well to common sensibility; and being the sensitive nerve of the fauces, it is probably concerned in the feeling of nausea, which may be so readily excited by stimulating the mucous membrane of this region. Such are its peripheral organization and central connections that stimulation of any part of the mucous membrane in which it

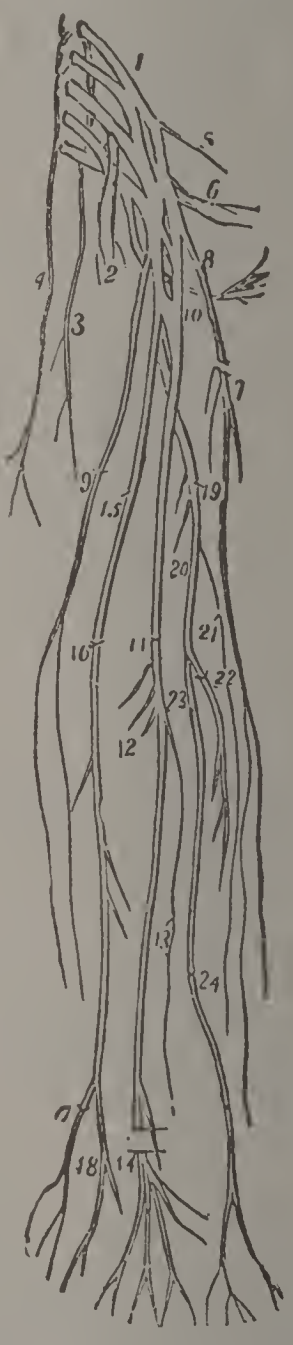


Fig. 4.—A diagram showing the Brachial Plexus of Nerves of the left side, with its branches. Front view.

1, the brachial plexus: 2 and 3, the anterior and posterior thoracic nerves: 4, the phrenic nerves going to the diaphragm: 7 and 9, the external and internal cutaneous nerves: 10, the origin of the median nerve (which receives its name from taking a course along the middle of the forearm to the palm of the hand): 12 and 13, branches of this nerve: 14, the point at which it passes under the annular ligament, and divides into its terminal branches, which are distributed to the thumb and to all the fingers except the little finger and the outside of the ring-finger, which are supplied by (15) the ulnar nerve, whose terminal branches are shown at 18: 19, the musculo-spiral nerve (the largest of the plexus): 23, 24, the radial nerve, one of the branches of the musculo-spiral.

ramifies excites instantly to contraction all the facial muscles supplied by the pneumogastric and the facial nerves; and the permanent irritation of its peripheral ramifications, as in the case of sore throat, will affect other muscles supplied by the facial nerve likewise. It is therefore an excitor of the movements necessary to pharyngeal deglutition.—*Op. cit.* II. 119.

The *pneumogastric nerve*, or *vagus*, is distributed to many important organs (the larynx, heart, lungs, stomach, etc.), and is of great physiological importance. See PNEUMOGASTRIC NERVE.

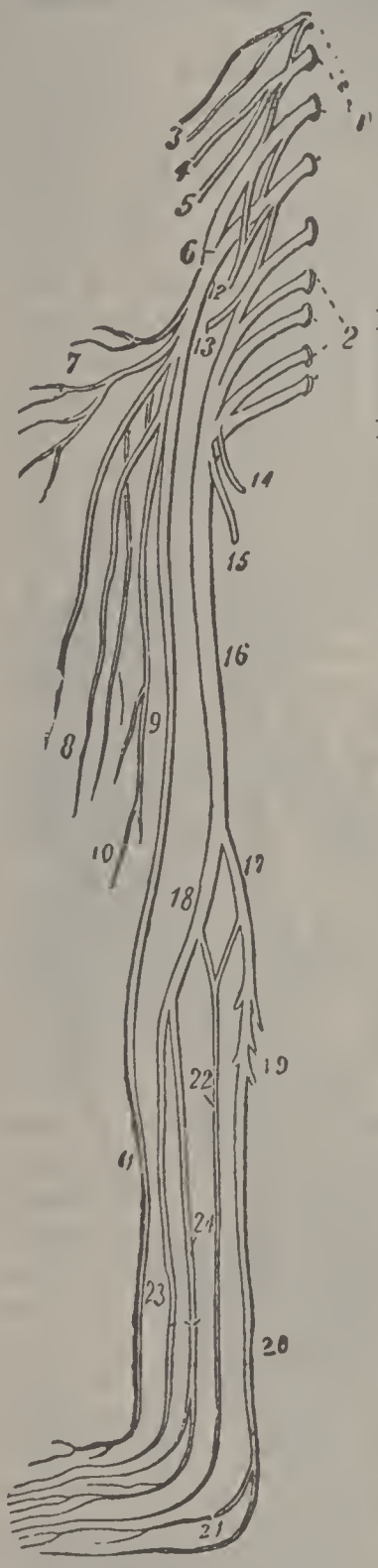


Fig. 5.—A diagram showing the Lumbar and Sacral Plexuses, with the Nerves of the lower extremity.

1, the first four lumbar nerves which, with the branch from the last dorsal, form the lumbar plexus: 2, the four upper sacral nerves, which, with the last lumbar, form the sacral plexus: 6, the anterior crural or femoral nerve: 7, 8, 9, 10, its branches: 11, its terminal branch, the long or internal saphenous: 13, the gluteal nerve: 15, the lesser ischiatic nerve: 16, the greater ischiatic or sciatic nerve (the largest nerve in the body), dividing at about the lower third of the thigh, into 17, the popliteal nerve, and 18, the peroneal nerve: 19, muscular branches of the popliteal, given off in the posterior region of the knee: 20, the posterior tibial nerve, dividing, at 21, into the internal and external plantar nerves, which are distributed to the sides of the toes, in precisely the same manner as the median and ulnar nerves are distributed to the fingers: 22, the external saphenous nerve: 23 and 24, the two terminal branches of the peroneal nerve—viz., the anterior tibial and the musculocutaneous nerves.

The *spinal accessory nerve* is more remarkable for its peculiar course than in any other respect. It rises from the spinal cord at the level of the fifth or sixth cervical nerve, passes upward between the anterior and posterior roots of the cervical nerves into the skull, and emerges from the cranial cavity with the two preceding nerves.

It is distributed chiefly to the trapezius muscle. See fig. 2, No. 15. For the points of origin of the cranial nerves, see BRAIN.

The mode in which the extremities receive their nerves is as follows. These nerves are derived from the spinal nerves, through the intervention of what is termed in anatomy a *plexus*. Four or five nerves proceed from the spinal cord for a certain distance, without any communication with each other. They then divide, and from the conjunction of the adjacent branches new nerves result, which again subdivide and interchange fibres. From the net-work or plexus thus formed nerves emerge, each of which is composed of fibres derived from several of the original branches. The most important of these plexuses are found in the regions of the neck, the axilla, the loins, and the sacrum, and are known as the cervical, brachial, lumbar, and sacral plexuses.

The *Brachial Plexus* is formed by communication between the anterior roots of the last four cervical nerves and the first dorsal nerve. These nerves are nearly equal in size, and their mode of distribution is explained by the diagram. The branches emerging from this plexus supply the shoulder and the arm; and the names of the most important of these branches are given in the description attached to the figure.

The *Lumbar* and *Sacral Plexuses,* with the nerves of the lower extremity, are shown in fig. 5; the description attached to the diagram explains the mode of formation and the distribution of the branches of these plexuses.

The general arrangement of the *sympathetic system,* or, as it is sometimes termed, the *sympathetic nerve,* has been noticed at the beginning of this article. Its cephalic portion consists of four ganglia on either side, viz., (1) the ophthalmic, or lenticular ganglion; (2) the sphenopalatine, or Meckel's ganglion; (3) the otic, or Arnold's ganglion; (4) the submaxillary ganglion. They all are closely connected with the branches of the trifacial nerve. The cervical portion contains three ganglia, the dorsal twelve, the lumbar four, the sacral five, and the coccygeal one (the ganglion impar), which, instead of lying on the side of the vertebral column, is placed in front of the coccyx, and forms a point of convergence for the two ganglionated cords which run from the cervical to the sacral region parallel to one another. Each ganglion may be regarded as a distinct nervous centre, from which branches pass off in various directions. In addition to the cords of communication between the ganglia, certain sets of nerves may be usually traced, viz., (1) *visceral* nerves, which generally accompany branches of arteries to the viscera (the lungs, heart, kidneys, liver, spleen, and intestine, etc.); (2) *arterial* branches, distributed to arteries in the vicinity of the ganglia; and (3) branches of *communication* with the cerebral and spinal nerves, an example of which is shown in fig. 1.

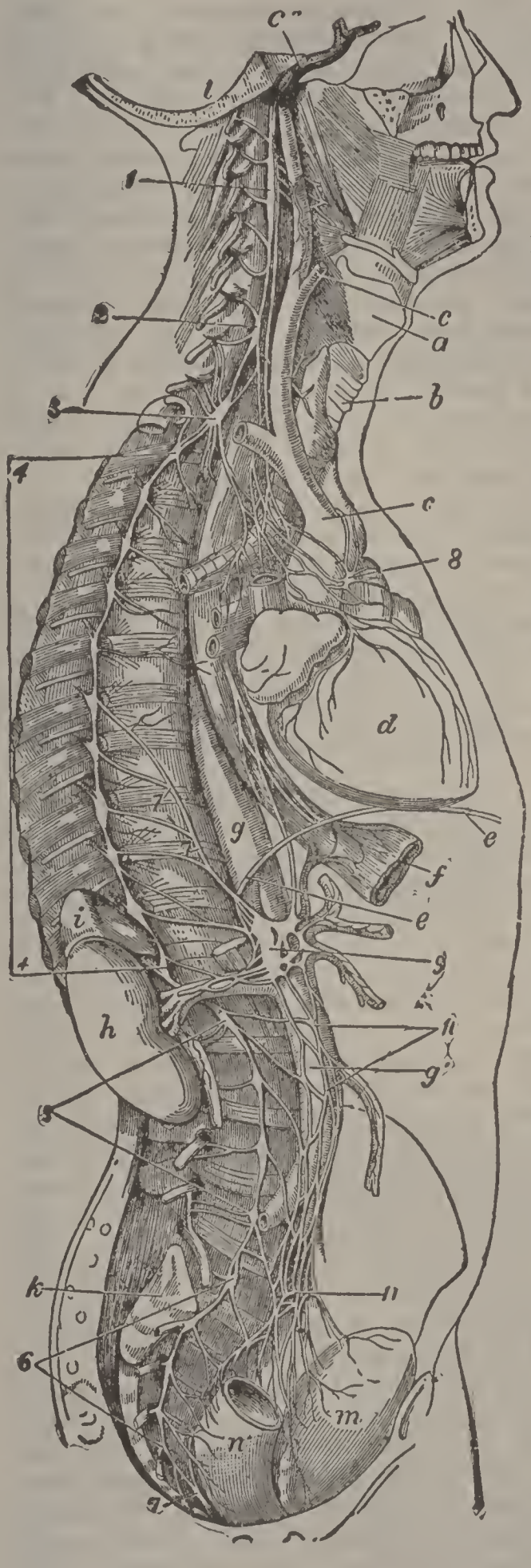


Fig. 6.—The Sympathetic Nerve; the right lateral walls of the chest and abdomen, and the stomach, intestines, liver, spleen and pancreas being removed to bring it in view.

1, 2, 3, the superior, middle and inferior cervical ganglia; 4, the two lines from this figure include the twelve dorsal ganglia; 5, include the four lumbar ganglia; 6, include the five sacral ganglia; 7, the ganglion impar; 8, cardiac plexus; 9, solar plexus; 10, aortic plexus; 11, hypogastric plexus; *a*, the larynx; *b*, the trachea; *c*, arch of the aorta; *c'*, external carotid; *c''*, internal carotid; *d*, the heart; *e*, *e*, the diaphragm; *f*, the cardiac end of the esophagus; *g*, the thoracic, and *g'* abdominal aorta; *h*, the kidney; *i*, the supra-renal capsule; *k*, the sacrum; *l*, the section of base of the skull; *m*, the bladder; *n*, the lower portion of the rectum.

The distribution of the sympathetic nerve on the right side is shown in fig. 6. The only nerve that our limited space will permit us to notice is the *great splanchnic.* This nerve arises by separate roots from the 5th, 6th, 7th, 8th, and 9th thoracic ganglia. These roots (see the figure) unite to form a large round cord, which passes obliquely downward and forward, and after entering the abdomen by piercing the diaphragm, ends in a large and complex ganglion, the *semilunar ganglion,* which lies upon the side and front of the aorta, at the origin of the celiac axis. The semilunar ganglia, with the nerves entering and emerging from them, combine to form the *solar plexus,* which, from the mass of nervous matter which it contains, has been termed the *abdominal brain.* It is because of the existence of this great nervous centre that a blow in the region in which it lies inflicts a severe nervous shock, and may even cause death.

The sympathetic system supplies motor power to many of the internal viscera, especially the heart and the intestinal canal; it also contains sensitive fibres, as is shown by the sufferings of patients during the passage of a gall-stone or a renal calculus through a duct, whose sole nervous energy is derived from this system; it presides over the process of secretion in the most important glands; and it operates on the blood-vessels in causing them to contract, while the cerebro-spinal nerves produce the opposite effect.

Nervous matter is distributed in two forms, the *gray* and the *white* matter. The gray matter contains nucleated nerve-cells with their axons or axis-cylinder processes and dendrites, and is largely supplied with blood; it is immediately associated with mental actions, and is the seat in which the force manifested in nervous actions is first developed. The white matter is composed of nerve fibres; it is less vascular than the former, and is simply the conductor of impressions made upon it. When these kinds of matter are united together into a mass they form a *nervous centre,* such as the brain or spinal cord. In the brain the white matter is in the interior (the medulla) and the gray on the surface (the cortex); in the spinal cord a reverse arrangement occurs, the gray matter being in the interior, the white matter surrounding it in the form of three columns or bundles on each side. The nervous matter of both kinds is a soft, unctuous substance, with very slight tenacity.

The unit of nervous matter is the *nervon,* composed of the nerve cell and its branches, one of which, the *axon,* or axis cylinder, is the essential conducting element of the nerve fibre. Nerve cells vary greatly in shape, being round, oval, stellate, or pear-shaped. They all have prolongations of their protoplasm, sometimes only one, sometimes many. These prolongations are of two kinds—the branched processes, or *dendrites,* and the single, usually unbranched process, the *axon,* or acis cylinder. The

dendrites extend for a variable distance from the cell, subdividing and branching out in all directions in a form comparable to the antlers of a deer. They do not unite with the branches of other cells, but terminate in blind extremities. The axon is of variable length, sometimes, as in the spinal nerves, being three or four feet long. It usually arises directly from the nerve cell, but may take its origin from a dendrite very close to the cell. After leaving the cell it usually acquires one or more enveloping membranes or sheaths. The usual coverings are the medullary substance, or white substance of Schwann, and outside this the neurilemma, or sheath of Schwann. Non-medullated nerve fibres, or those in which

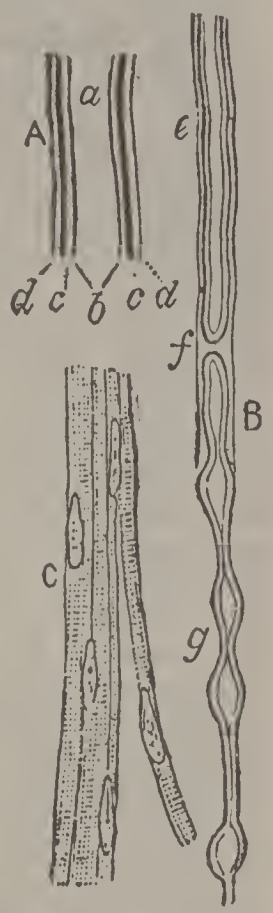


Fig. 7.

A, diagram of a spinal nerve fibre; *a*, axis cylinder; *b*, inner border of white substance; *c*, *c*, its outer border; *d*, *d*, neurilemma; B, nerve fibre; *e*, in a natural state, showing the parts as in A; *f*, the white substance and axis cylinder interrupted by pressure, while the neurilemma remains; *g*, the same, with varicosities which are especially apt to be exhibited in the nerves of the special senses, and of young animals generally; C, non-medullated fibres from the sympathetic system treated with acetic acid to exhibit their nuclei.

the white substance of Schwann is absent, are found chiefly in the sympathetic nervous system. A nerve trunk, or simply nerve as it is usually called, is made up of bundles of nerve fibres, each one having an unbroken connection with a nerve cell in the brain, spinal cord, or a ganglion. A number of fibres are grouped into a bundle, held together by delicate connective tissue and surrounded by a sheath; and a number of these bundles are in turn grouped together and surrounded by a loose sheath of connective tissue to form a nerve. The connective tissue surrounding the nerve also contains blood-vessels and lymphatic vessels.

The gray matter of the brain and spinal cord is composed of the nerve cells, their dendrites, and the beginning of their axis cylinders; the white matter is made up of the nerve fibres surrounded by the medullary sub-

stance. These elements of the white matter, and in great part also of the gray matter, are held together and supported by a network of very fine fibres and cells called the *neuroglia.*

It is obvious that it is through the instrumentality of the nervous system that the mind influences the bodily organs, as when volition or emotion excites them to action; and that, conversely, impressions made on the organs of the body affect the mind, and excite mental perceptions through the same channel. 'In this way,' to quote the words of Dr. Todd, 'the nervous system becomes the main agent of what has been called the life of relation; for without some channel for the transmission of the mandates of the will to the organs of motion, or some provision for the reception of those impressions which external objects are capable of exciting, the mind, thus completely isolated, could hold no communion with the external world.' The nature of the connection between the mind and nervous matter is, and must ever be, the deepest mystery in physiology, and one into which the human intellect can scarcely hope to penetrate. There are, however, many actions of the body in the production of which the mind has no share. Of this kind are the nervous actions associated with the functions of organic life, such as digestion, respiration, and circulation. There is another class of actions for which two nerves (an afferent, or excitor, and a motor) and a nervous centre are necessary. These are the actions known as *reflex* or *excito-motory.* Thus the movement of the esophagus, in propelling the food onward to the stomach, is caused by the stimulus of the food acting on the excitor or afferent nerves, which, through the spinal cord, excite the motor or efferent nerves, and thus give rise to the necessary muscular action. When the edge of the eyelid is touched, the excitor nerve (a branch of the ophthalmic division of the fifth or trifacial nerve) conveys the impression of the stimulus to the nervous centre, and the eye is at once closed by the motor influence, which is transmitted by a branch of the facial nerve to the orbicular muscle. In such cases as these consciousness takes no part. In some of them the mind is indeed conscious of the application of the stimulus, as well as of the muscular act which follows; but even in these cases no effort of the will could modify or interrupt the sequence of the phenomena.

The velocity with which impressions are transmitted by the nerves has been recently made the subject of investigation, but it is doubtful how far the observations are to be depended on, in consequence of the various sources of fallacy which pertain to such experiments. According to Hirsch, the velocity is 34 mètres, or about 112 ft. per second, in man; while Helmholtz fixes it at 190 ft. per second in the frog.

NERVY, a. *nėr'vĭ* [L. *nervus,* a nerve (see NERVE)]: in *OE.,* strong; vigorous.

NESCIENCE, *nĕsh'ĭ-ĕns* [L. *nesciens*, unknowing, ignorant—from *ne*, not; *sciens*, knowing]: want of knowledge; ignorance; philosophy of the unknowable.

NESH, a. *nĕsh* [AS. *hnæsc*, soft: Goth. *hnaskwus*, soft, tender: Scot. *nash*, tender, delicate]: in *old* and *prov. Eng.*, soft; tender.

NESS, Loch, *lŏch nĕss:* long narrow lake in Invernessshire, Scotland, extending n.e. and s.w.; 23 m. in length, $1\frac{1}{4}$ m. in average breadth. Its n.e. extremity reaches a point 6 m. s.w. of the town of Inverness. It receives the Morriston, the Oich, the Foyers, and other streams, and its surplus waters are carried off to the Moray Firth by the river Ness. It lies in the valley of Glenmore, and is inclosed by mountains averaging 1,000 ft. in height; but the scenery on its banks is not strikingly picturesque. In many places it is about 130 fathoms in depth, and ice never forms to any considerable extent.

NESS, *nĕs*, or Naze, *nāz* [identical with Eng. *nose;* AS. *næse*, a cape—comp. Ger. *nase;* Icel. *nes;* L. *nasus;* Fr. *nez*, a cape, headland (see Naze)]: Geographical termination, signifying promontory. Names in *-ness* abound among the Orkney and Shetland Islands, and on the coast of Caithness; and they occur, though less frequently, along the e. coast of Great Britain, as far as Dungeness in Kent. As the corresponding Scandinavian termination *-naes* prevails in the names of promontories in Norway, Sweden, and Denmark (e. g., Lindesnaes, in s. Norway), the existence of names in -ness in Britain is held as evidence of Scandinavian and Danish colonization. Grisnez, on the n. coast of France, points to the same source.

NESSELRODE, *nĕs'sil-rō-dĕh*, Karl Robert, Count: eminent diplomatist, long foreign minister of Russia: 1780, Dec. 14—1862, Mar. 23; b. Lisbon, where his father, descendant of an ancient noble family on the lower Rhine, was then Russian ambassador. He early entered on a diplomatic career, gained in a high degree the esteem and confidence of Emperor Alexander, and was one of the representatives of Russia in the important negotiations, 1813, between the powers that combined against France. In 1814 he accompanied the Russian emperor to France, and signed the treaty of the Quadruple Alliance at Chaumont, Mar. 1. He was also one of those who concluded the treaty with Marshal Marmont for the surrender of Paris. He continued to take a principal part in all the negotiations which ended in the Peace of Paris; and was one of the most prominent of the plenipotentiaries in the Congress of Vienna. He was one of the most active diplomatists of the Holy Alliance, and accompanied Emperor Alexander to the congresses of Aix-la-Chapelle, Troppau, Laibach, and Verona. Emperor Nicholas reposed in him the same confidence, and under his reign he conducted the Russian policy in the affairs of Greece and Turkey. Amid the European convulsions of 1848 and

9, Russia, under his guidance, refrained from interference, till opportunity occurred of dealing a deadly blow to the revolutionary cause in Hungary, and, at the same time, of bringing Austria very much under Russian influence. Being one of the chiefs of the German or moderate party in Russia, N. is supposed to have exerted himself strenuously to preserve peace with the Western Powers; and after the war had broken out in 1854, and the ill success of Russia was manifest, he undoubtedly strove for the re-establishment of peace, and for the assembling of a congress to settle all disputes. After the accession of Alexander II., he retired from the direction of foreign affairs, and was succeeded in that department by Prince Alexander Gortschakoff, but retained the dignity of chancellor of the empire, and a seat in the ministerial council. He died at St. Petersburg.

NESSLER'S TEST, n. *nĕs'lĕrz tĕst* [named from the inventor]: in *chem.*, a very delicate test for ammonia, consisting of iodide of mercury dissolved in iodide of potassium, and made alkaline with solution of soda. It gives a brown precipitate or color according to the quantity of ammonia present, and is capable of detecting one part of that substance in ten million parts of water.

NESSUS, *nĕs'sŭs:* one of the fabled Centaurs of Greek mythology, son of Ixion and Nephele, or the sun and the cloud. The name belonged to a river of Thessaly, and the fabled creature figured the vapor of the stream, with its relation to sun and cloud. In the mythical story, Nessus, pretending to assist Hercules (who is again the sun-god) to get possession of Dejanira, plays a trick on him and gets his death from one of the poisoned arrows of the god-hero. In dying, N. plans revenge by sending to Dejanira his tunic, deeply blood-poisoned, as a gift to excite love. She gives it to Hercules, who puts it on and is killed by the poison which came from his own arrows.

NEST, n. *nĕst* [Ger. *nest;* Sw. *näste*, a nest: Pol. *gniazdo*, a nest, a breed: Bret. *neiz;* Gael. *nead;* L. *nidus:* allied to Ger. *nähen*, S. *nestan*, L. *nectere*, to sew, bind, tie]: bed or dwelling prepared by a bird for incubation, and for its young till able to fly; any place where insects or small animals are produced (see NESTS): a warm, close place of abode; a number of persons dwelling together, in an ill sense, as a *nest of thieves;* a number of boxes or baskets placed one within the other; a set of small drawers; in *OE.*, a place of residence; abode: V. to build and occupy a nest. NEST'ING, imp. NEST'ED, pp. NEST-EGG, an egg left in a nest to prevent the hen forsaking it; money laid up as a beginning or nucleus.

NEST-BUILDING APES: various kinds of monkeys, including the higher anthropoid apes, which build sleeping-places for their females and young. Koppenfels asserts that the gorilla breaks and twists the branches of a tree 30 ft. from the ground, and piles on twigs and a layer of leaf-moss. The male animal crouches all night at the

foot of the tree with his back against it, and thus protects his household against leopards. So the chimpanzee makes a nest for his family on a forked branch, and spends the night sitting on guard immediately beneath it. The orang unquestionably makes a nest of boughs and leaves laid crosswise, lined with fronds or leaves of orchids: these nests are 10 to 15 ft. high. Gibbons seem not to build nests at all. The best authorities think that the pent-house which Du Chaillu said was built by the Nschiego Mbouve (which Hartmann unhesitatingly identifies with the chimpanzee) was suggested solely by a sight of the male animal sitting beneath its family nest as guardian. The cut is alleged to have been

Nest-building Ape (*Troglodytes calvus*).

much embellished by imagination. Some assert (though Wallace doubts it) that the orang makes a fresh lair every night; others, that this is done when the one in use no longer keeps out the rain, perhaps once in 10 or 15 days. Du Chaillu's nest-building ape (Nschiego Mbouve) is nearly four ft. in length. Du Chaillu supposes this ape to rest all night on a projecting branch, under its nest or umbrella, with an arm round the stem of the tree for security. The nests are generally 15 or 20 ft. from the ground. These apes inhabit the most lonely parts of the forests. The nests are never congregated together, so that this ape does not seem to be gregarious. It feeds on fruits.—Du Chaillu discovered a second species of nest-building ape, on his second visit to the Ogobai, very similar to the *Troglodytes calvus*, but which constructs its nest in different fashion. It is called Nschiego Nkengo by the natives. It makes its nest or shelter 20 or 30 ft from the ground, by bending over and intertwining a number of the weaker boughs, the foliage of which forms its protection from rain.

NESTLE, v. *nĕs′l* [AS. *nestlian*, to nestle—from ***nest***, a nest, which see] : to cherish and fondle closely, as a bird its young; to lie close and snug. NESTLING, imp. *nĕs′-lĭng :* ADJ. recently hatched : N. a young bird from the nest or in it. NESTLED, pp. *nĕs′ld.*

NESTOR, *nĕs′tor :* according to ancient Grecian legend, son of Neleus and Chloris, born in the Messenian Pylos. He escaped destruction when Hercules slew all his brothers, being then a dweller among the Geronians, with whom he was brought up. He married Eurydice, by whom he became the father of a numerous family. In his youth he was distinguished for valor in wars with the Arcadians, Eleians, and the Centaurs, and in his advanced age for wisdom. Although he was an old man when the expedition against Troy was undertaken, he joined it with his Pylians in 60 ships. Homer makes him the great counselor of the Grecian chiefs, and extols his eloquence as superior even to that of Ulysses. His authority was considered equal even to that of the immortal gods. N. returned in safety to his own dominions after the fall of Troy, with Menelaus and Diomedes, and long ruled over the people of Pylos.

NESTORIAN, n. *nĕs-tō′rĭ-ăn :* one of an anc. sect founded by *Nestorius* of Constantinople in the 5th century, who taught that the divine and human natures of Christ did not unite and form one person—that Mary was not the *mother of God*, but of Christ : ADJ. of or relating to the Nestorians. NESTORIANISM, n. distinctive doctrine of the Nestorians (see NESTORIUS : also, for their history to the time of its condemnation). In later ages, even after the Council of Ephesus, Nestorianism prevailed in Assyria and Persia, chiefly through the influence of the well-known school of Edessa. Although vigorously repressed in the Roman empire, it was protected, and probably the more on that account, by the Persians, and ultimately was established by King Pherozes as the national church, with a patriarch resident at Seleucia; its fundamental doctrine, as laid down in the synod of Seleucia 496, being the existence of two distinct persons as Christ, united solely by a unity of will and affection. Under the rule of the caliphs, the Nestorians had considerable protection, and throughout the countries of the East their community extended itself. For their condition in central Asia during the mediæval period, see JOHN PRESTER. In the middle of the 12th c., their church reckoned no fewer than 90 bishops under regular metropolitans, together with 56 others, whose special dependencies are unknown; but in the destructive career of Tamerlane, they shared the common fate of all the representatives of the eastern civilization. In the 16th c., a great schism took place in this body, of which a portion renounced their distinctive doctrine, and placed themselves under the jurisdiction of the Roman pontiff, to whom, under the title of Chaldean Christians, they have

since remained faithful. The others still maintain their old creed and their ancient organization. Their chief seat is in the mountain ranges of Kurdistan. They are at present a poor and illiterate race, numbering about 140,000, and subject to a patriarch residing at Diz (who is always chosen from the same family, and takes invariably the name of Schamun, or Simon) and 18 bishops. All these prelates are bound to observe celibacy, but marriage is permitted to the priests and inferior clergy. Their liturgical books recognize seven sacraments, but confession is infrequent, if not altogether disused. Marriage is dissoluble by the sentence of the patriarch; the communion is administered in both kinds, and though the language of the liturgy plainly implies the belief of transubstantiation yet, according to Layard, that doctrine is not popularly held among them. The fasts are strict and of very long duration, amounting to very nearly one half of the entire year. They pray for the dead, but are said to reject the notion of purgatory, and the only sacred image which they use or reverence is that of the cross. The Nestorians of Kurdistan, like the Christians of the Lebanon, have suffered much from time to time through the fanaticism of the wild tribes among whom they reside. In a massacre 1843, and again 1846, many fell victims; and even still they owe much of their security to the influence exercised in their favor by the foreign representatives at the Turkish and Persian courts.

There is another body of Nestorians who have existed in India from the period of the early migrations of the sect, and who are called by the name of Syrian Christians. Their chief seat is in Travancore, where they number about 100,000. Among both bodies of Nestorians, European missionaries, Rom. Cath. and Prot., have of late years endeavored to effect an entrance. The missions of the Amer. Board to the Nestorians in Persia have been interesting and successful. In some cases, priests and even bishops have put themselves under missionary instruction. The missionaries found these relics of an ancient and powerful church in great ignorance and poverty, without any printed Scriptures, and almost without any books. Now, they are supplied with the Bible both in their ancient language and in the vernacular. Of various school-books about 12,000 vols. have been printed, periodicals are circulated, and boarding school for girls and a high school for boys have been established, at which hundreds have been fitted for usefulness, of which number more than 70 have become preachers of the gospel. The Nestorian converts themselves have become missionaries to the Moslems, Jews, and Malaken's of Russia. See Perkins' *Residence of Eight Years in Persia, among the Nestorian Christians* (Andover 1843); Anderson's *Oriental Churches* (1872); Buchanan's account (1807); Smith and Grant's *Researches;* and Dean Stanley's *History of the Eastern Church.*

NESTORIUS, *nĕs-tō'rĭ-ŭs:* patriarch of Constantinople from 428 to 431; d. some time after 439; b. Germanicia, a city of n. Syria, in the patriarchate of Antioch. He was probably a disciple of the celebrated Theodore of Mopsuestia; and having received priest's orders at Antioch, became so eminent for his fluency, if not eloquence, as a preacher, and for grave demeanor and exemplary life, that, on occasion of a dispute about the election of a patriarch of Constantinople, he was selected by the emperor, 428, to fill the vacant see. Soon after his consecration, a controversy arose as to the divine and human natures of our Lord, in which N. took a leading part. One of the priests, who followed N. to Constantinople, Anastasius, having in a sermon, which was by some ascribed to N. himself, denied that the Virgin Mary could be truly called the 'mother of God,' being only in truth the mother of the man Christ, N. warmly defended Anastasius, espoused this view, and elaborated it into the theory which has since been known by his name, and which equivalently, if not in formal terms, exaggerated the distinction of two natures in our Lord into a distinction of two persons—the human person of Jesus and the Divine Person of the Word. An animated controversy ensued, which extended from Constantinople to the other patriarchates, and drew from Cyril, patriarch of Alexandria, a formal condemnation of the doctrine of N. in 12 anathemas still preserved, and a similar condemnation, accompanied by a threat of deposition and excommunication, from Celestine, bishop of Rome, unless he would withdraw the obnoxious doctrine. N. remaining firm in his opinions, a general council was convened at Ephesus 431, at which Cyril took the most active and prominent part, and in which, notwithstanding the absence of the patriarch John of Antioch and his bishops, N. was condemned and deposed. Considerable opposition was offered to this judgment for a time, but ultimately N. was confined in a monastery near Constantinople, whence, after four years, still persisting in his views, he was banished to the Greater Oasis in upper Egypt, and, after several changes of his place of confinement, died in exile. The account given by Evagrius, that his death was caused by a disease in which his tongue was eaten by worms, rests, according to Evagrius himself, on a single and unnamed authority. The more probable narratives ascribe his death to the effects of a fall.

NESTS.

NESTS: structures which animals prepare for the rearing of their young. They are very different, not only when the creatures which construct them belong to widely separated divisions of the animal kingdom, but often when the animals are of the same class, or even when they are nearly allied; and while some construct very simple nests, and those of others are very curious and elaborately framed, some make no nest at all.—Among MAMMALS, the nest-builders are certain rodents, e.g., moles, mice, dormice, squirrels, etc., also foxes, weasels, rabbits. The structures of some of the species are as artfully contrived and as beautiful as the nests of birds.—It is among BIRDS that nest-making is most general; though there are not a few species which merely scrape a hole in the ground, and many sea-fowls lay their eggs on ledges of naked rock. The situations chosen by birds for their nests are very various, each species affecting some particular kind of situation, as each species also exhibits a uniformity in choice of materials and in form and mode of structure; these particulars, however, being all liable to modification—within certain limits—according to circumstances. Some birds' nests consist of merely a few straws or leaves collected together; some, of such materials as twigs, straws, moss, hair, etc., very nicely interwoven, and often with a lining finer than the framework; some, as those of swallows, are made of clay or other soft material, which hardens as it dries. Birds' nests are generally open at top, but some, as those of swallows, are so placed, under a projection of rock or of a building, as to be covered, and have the opening at the side; while others are vaulted, and have the opening at the side. Some are situated in holes excavated in clayey, loamy, or sandy banks. The nests of troupials, baltimores, weaver-birds, etc., are remarkable for ingenious contrivance; and a very singular nest is that of the tailor-bird, made by sewing together the edges of leaves. (See these titles.) Many birds are as solitary as possible in their nidification; while others, as rooks and herons, congregate in large communities.—No REPTILES are known to construct nests; their utmost approach to it being to take possession of, or to make, a hole for their eggs in sand, or in some other suitable situation.—The nests of FISHES have recently attracted much attention of naturalists. It is supposed that the ancients were acquainted with the nest-building instinct of some fishes; but it was unknown to modern naturalists till 1838, when it was discovered in a species of Stickleback (q.v.): it now gives interest to many a fresh-water aquarium. Not many fishes are yet known as nest-builders. Among them are gobies and the goramy. Many are known not to construct nests. The salmon and others exhibit an approach to the nest-building habit, in making a place for their eggs in the sand or gravel which they choose for a spawning-bed.—Many INSECTS—a small proportion, however, of the whole number, and mostly *Hymenoptera*—construct nests, as bees, wasps, and ants. The nests

of the social bees and wasps are also their ordinary habitations, but the nests of solitary bees are solely for their young. A few insects, not hymenepterous, e.g., some weevils, also may be said to make nests; but among insects provision for the wants of the young is made usually in very different ways. Certain spiders, among which are the water-spider, construct nests. The instinct of nest-making, connected as it is with the instinctive care for their young which the Creator has made so important a part of the nature of so many animals, is not an index either of that care or of the affection with which, in many cases, it is conjoined; and some of the animals which construct no nest are among those in which affection for their young is manifested in the highest degree.—The nest making instinct seems an essential part of the constitution of those animals in which it appears at all.

NESTS, EDIBLE: important article of commerce between the Eastern Islands and China, and of luxury in China. They are nests of several species of Swallow (q.v.), of the genus *Collocalia*. The best known of these birds, *C. esculenta*, is about 4½ inches in length, 11 inches in expanse of wing, dusky black above, pale ash-color beneath. The nest is shaped like that of the common swallow, and adheres to a rock; vast numbers being

Chinese Swallow and Nest.

found together—often in absolute contiguity—in caves of the Eastern Archipelago as those of the same and allied species are in other islands of the E. Indies. The nests themselves are formed of grass sea-weed fibres, small leaves, etc., and are attached to the rock by a sort of bracket, made of a gelatinous substance, which is the part really eaten. This was formerly thought to be made of sea-weeds, but is now known to consist of saliva, which the swallow exudes from the salivary glands under the tongue. The nests are collected by

means of ladders, and often by means of ropes, which enable the gatherers to descend from the summit of a precipice, like the rock-fowlers of the north. The gathering of the nests takes place after the young are fledged, thrice in a year. In the Chinese market the nests are sold for $10 to $35 per lb., according to the quality; and they are of course used only by the most wealthy, chiefly for thickening rich soups. The imports at Canton are reckoned at 1,200 piculs, or 168,000 lbs., representing about 8,400,000 nests. The nests are very wholesome and nourishing, but quite devoid of the peculiar properties which the Chinese ascribe to them. Five caverns at Karang-Bollong, in Java, contain 330,000 swallows, and yield annually about 500,000 nests. The nests weigh about half an ounce each.

NET, a. *nĕt* [F. *net;* Sp. *neto;* It. *netto*, pure, clear, free —from L. *nitĕō*, I shine (see NEAT 1)]: pure; unadulterated; clear of all charges or deductions, as *net* profit, *net* weight: V. to receive or produce as clear profit. NET′TING, imp. NETTED, pp. *nĕt′tĕd.* NET is improperly written NETT. NET PROCEEDS, the amount or sum which goods produce after every charge is paid. NET PROFIT, the profit after deducting all expenses. NET SUM, the sum remaining after all proper deductions are made. NET WEIGHT, the weight of merchandise after allowance has been made for the casks, bags, or any inclosing material.

NET, n. *nĕt* [Goth. *nati;* Icel. *not* or *net;* Ger. *netz;* Bret. *neud*, a net]: a texture with open meshes, made of twine, thread, etc., used for catching fish or birds (see NETS): kind of lace made of flax or silk; a snare; an inextricable difficulty: V. to form as network; to take with a net. NET′TING, imp.: N. a piece of network; the process of forming meshes for nets. BOARDING-NETTING, netting of strong rope, stretched above the bulwarks of a ship, over the port-holes, etc., to a considerable height, to prevent entrance of boarders from hostile boats. In positions where boat attacks are feasible, ships are thus protected at night, and at other times when attempts at boarding are anticipated. HAMMOCK-NETTING, netting in the bulwarks of a ship, usually in the waist, to keep the hammocks of the crew when stowed there during the day; thus netted together, the hammocks form a valuable barrier against bullets. HATCHWAY-NETTING, netting of inch rope placed over an open hatchway during fine weather, to prevent persons from falling through. NET′TED, pp.: ADJ. made of network; in *bot.*, covered with raised lines disposed like the threads of a net. NETTY, a. *nĕt′-tĭ*, resembling a net or network. NETWORK, work formed with meshes like a net.

NETHER, a. *nĕth′ĕr* [Icel. *nedan*, under; *nedri*, lower: Ger. *nieder*, lower: AS. *neothan*, beneath]: lying beneath; in a lower place; opposed to *upper;* belonging to the regions below. NETH′ERMOST, a. superl. *-mōst*, lowest.

NETHERLANDS, *neth'ér-landz*, KINGDOM OF THE: in w. Europe; between 50° 43′ and 53° 36′ n. lat., and 3° 22′ and 7° 16′ e. long.; bounded n. by the North Sea, e. by Hanover and w. Prussia, s. by Liége, Belgian Limburg, Antwerp, E. and W. Flanders, w. by the North Sea. Its greatest length n. to s. is 195 English m., greatest breadth from the w., on the North Sea, to the extremity of Overyssel, on the e., 110 English m.; 12,630 sq. m.

Pop. 1859 (without Luxemburg, q.v.), 3.309,128. The following table gives the pop. 1899, with the area of the provinces. Pop. (1899) 5,104,137.

Provinces.	Area in Sq. Miles.	Pop. 1899.	Provincial Capitals.
North Babrant	1,980	553,842	Bois-le-Duc.
Gelderland	1,965	566.549	Arnheim.
South Holland	1,166	1,144.448	The Hague.
North Holland	1,070	068.131	Haarlem.
Zeeland	690	216,295	Middelburg.
Utrecht	534	251,034	Utretcht.
Friesland	1,282	340.262	Leeuwarden.
Overyssel	1,291	333,338	Zwolle.
Groningen	790	299,602	Groningen.
Drenthe	1,030	148.544	Assen.
Limburg	850	281,934	Maastricht.
	12,648	5,104,137	
Grand Duchy of Luxemburg	998	236,543	Luxemburg.
Total	13,648	5,340,780	

The pop. (1901, Dec. 31), exclusive of Luxemburg, averaged 416 to the sq. m. In Drenthe it is 149, and in S. and N. Holl. rises to 1.024 and 933: Utrecht, Limburg, and Gröningen were next densely peopled. In 1871, the births amounted to 128.305, of which 4,599 were illegitimate; average 1 to 27.90: in N. Brabant, 1 to 44.38; Gelderland, 1 to 30.04; S. Holland, 1 to 22.73; N. Holland, 1 to 24.23; Zeeland, 1 to 26.30; Utrecnt, 1 to 21.43; Friesland, 1 to 36.24; Overyssel, 1 to 45.07; Gröningen, 1 to 22.54; Drenthe, 1 to 32.03; Limburg, 1 to 37.44.

In 1900 the population of the leading towns was as follows: Amsterdam, 530.718; Rotterdam, 341.051: The Hague, 218.029; Utrecht, 106,800; Gröningen, 68.440; Haarlem, 66,827; Arnheim, 58,168; Leiden, 54,857; Tilburg, 42,334; Maestricht, 34,734; Nimeguen, 45,304; Dordrecht, 39,261; Leeuwarde, 33.176; Delft, 32,136.

Physical Aspect.—The land is generally low, much of it being under the level of the sea, rivers, and canals, especially in N. and S. Holland, Zeeland, the s. part of Gelderland, and Friesland. Along the w. coast, the lowlands are protected from the sea by a line of sand-hills or dunes; and where that natural defense is wanting, strong dikes have been constructed, and are maintained at great expense, to keep back the waters. The greatest of these dykes are those of the Helder and of w. Kapelle,

on the e. coast of Walcheren (q.v.), which require each more than $30,000 annually to keep them in order. Engineers, called the officers of the Waterstaat, take special charge of the dikes and national hydraulic works, the expense of which is reckoned at about $2,500,000. A hilly district stretches from Prussia through Drenthe, Overyssel, the Veluwe or Arnheim district of Gelderland, the e. part of Utrecht, into the Betuwe or country between the Maas and the Waal. This tract of country has many pretty spots, is of light sandy soil, well watered, and, when not cultivated, is covered with heath or oak-coppice. The greatest part of the N. is very fertile, the low lands and drained lakes, called Polders (q.v.), being adapted for pasturing cattle, and the light soils for cereals and fruits; but in some districts there are sandy heath-clad plains, extensive peat-lands, and undrained morasses, which industry is rapidly bringing under cultivation.

Islands, Rivers, Canals, etc.—The islands may be divided into two groups, of which the s. formed by the mouths of the Schelde and Maas, contains Walcheren, S. and N. Beveland, Schouwen, Duiveland, Tholen, St. Philippsland, Goeree, Voorne, Putten, Beyerland, Ysselmonde, Rozenburg, and the island of Dordrecht. The n. group contains the islands at the entrance of the Zuider Zee and along the coast of Groningen and Friesland, as Wieringen, Texel, Vlieland, Terschelling, Ameland, Schiermonnikoog, and Rottum. In the Zuider Zee are Marken, Urk, and Schokland. The chief rivers are the Rhine, Maas, and Schelde. Important branches of these are the Waal, Lek, Yssel, Roer, etc. Water-ways are more numerous than in any other European country, the immense tracts of meadow-land and the fertile polders being girdled by large canals, and cut in all directions by smaller ones for drainage and communication. Those of most importance to the national trade are: the N. Holland canal, constructed 1819–25, to connect the port of Amsterdam with the North Sea; the Voorne canal, from the n. side of Voorne to Hellevoetsluis, which shortens the outlet from Rotterdam; the s. Willemsvaart, through Brabant, Dutch and Belgian Limburg, from Bois-le-Duc to Maastricht, 71½ English m. in length, with 24 locks. Besides these, there are numerous important canals, connecting rivers, and cutting the kingdom into a network of water-courses. To improve the entrance to the Maas the Hoek of Holland has been opened up. A new canal through the Y and peninsula of Holland was opened 1876, Nov. 1, nowhere less than 80 yards broad, with sluices nearly 400 ft. in length, and a depth of nearly 23 ft. This has reduced the distance from Amsterdam to the sea to about 16 m., and provides a safe way for large ships. The harbor, 52° 29′ n. lat. and 4° 36′ e. long., is formed by piers of concrete built into the North Sea. The expense, including the recovery of 15,000 acres of land from the Y., amounted to about $10,000,000. In 1901 there were 1,730 m. of railroad open for traffic, built with

state funds and operated by a company that pays the govt. a specified proportion of net profits. 1889, Jan. 1, there were 277 chief postal and 27 minor offices. During 1888, there were forwarded 187,782,345 letters and 4,084,188 telegrams. Postal savings banks were established 1881, and at the close of 1901 the deposits were 1,615,000.

Climate, Agriculture, Produce, etc.—The climate is variable, chilly colds often closely succeeding high temperatures, inducing various forms of fever and ague, and requiring peculiar care as to clothing, etc. In summer, the thermometer sometimes rises above 80° and even to 90° F. in the shade, and a winter of great severity usually occurs every fifth year, when carriages and heavily laden wagons cross the rivers and the Y on the ice, and thousands enjoy the national pastime of skating.

The farms are generally small, and are well cultivated, though the implements are old-fashioned and clumsy. Much progress is being made in reclaiming the sandy wastes in Drenthe and Overyssel, by planting them with fir and oak, and sowing buckwheat, oats, and rye. The best implements are also being gradually introduced, and the steam-plow was, in 1862, put in operation on the lands of the drained Haarlem Lake. The following table shows the agricultural products, with their values, for a good year in the period 1870–80:

Wheat to the value of	$13,857,952
Rye	21,516,678
Barley	5,316,632
Oats	10,788,137
Beans	3,163,466
Pease	2,123,163
Buckwheat	3,967,811
Colza	3,287,115
Potatoes	20,967,741
Madder	1,350,441
Chicory	338,925
Flax	4,393,095
Hemp	222,977
Beet	1,915,185
Tobacco	822,929
Various	106,295
Total	$94,138,542

In 1879, wheat occupied 329,845 acres; rye, 496,966 acres; barley, 117,418 acres; oats, 282,143 acres; potatoes, 351,496 acres; buckwheat, 135,232 acres.

In 1900 there were 5,917,932 acres of arable land, of wh. 2,169,872 ac. culti., 2,963,455 past.; $155,582 gard. and orchard, 629,030 forest. Horses, 295,000, 1,655,600 cat., 770,000 sheep, 1,370,000 pigs. Leading agri. Zeeland are wheat and madder; in S. Holland, madder, hemp, butter, and cheese; in N. Holland, butter and cheese are extensively made, and cattle, sheep, and pigs reared and exported. The horses of Friesland, Zeeland, and Gelderland are of first-rate quality. The exportation of butter from Holland and Friesland, and of Edam, Leyden, Gouda, and Frisian cheese, is large; 1901 the value of the exports of cheese was $6,621,000, of butter $8,-

837,000. Fruit is abundant, and in several prov., as Gelderland, Utrecht, and Drenthe, much attention is paid to bee-keeping. In Haarlem and neighborhood, tulips and hyacinths are much cultivated, realizing a large annual amount. In 1901 the imports of shrub, bulbs, and trees were valued at $271,600; the exports $3,666,000. Wild ducks, snipes, plovers, and hares are plentiful; there are also conies, partridges, pheasants, and deer—game forming an article of export.

Geology, Mineralogy, etc.—The N. are of recent formation, and consist of an alluvial deposit, chiefly a deep, rich clayey soil, superimposed on banks of sand, marine shells, and beds of peat and clay. It appears that at some distant period there had been a depression of the land below its former level, enabling the sea to burst through its sand-banks, submerge the land, and form new deposits. The higher districts are composed of sand-drift mingled with fertile earths, and resting on a bed of clay. Coal is worked in Limburg; and a soft sandstone, which becomes fit for building purposes after having been some time exposed to the atmosphere, is quarried in the s. part of that province, which has also pipe and other clays. Valuable clays for pottery, tile and brick making abound in the various provinces.

Manufactures, Industries, etc.—The chief manufactures are linen, woolen, cotton, and silk fabrics; paper, leather, glass, etc. Leyden and Tilburg are famed for woolen blankets, wool-dyed pilot, fine cloths, and friezes; Bois-le-Duc for linens and rich damasks; calicoes, shirtings, drills, table-cloths, striped dimities are made at Almelo, Amersfort, and in the leading towns of Overyssel. Good imitation Smyrna and Scotch carpets, and carpets of hair and wool, are manufactured at Deventer, Delft, Arnhem, Hilversum, Utrecht, and Breda; Turkey-red yarns, dyed silks, and silk stuffs at Roermond, Utrecht, Haarlem, etc.; leather, glass, firearms, at Maastricht and Delft; iron-founding, rolling and hammering of lead and copper, cannon-founding, are carried on at the Hague, etc.; and powder-mills at Muiden; Oudenkerk, Middleburg, Bois-le-Duc, Amsterdam, Nymegen, etc., have important breweries, those of S. Bois-le-Duc, and Amsterdam manufacturing very large quantities. Waalwyk, Heusden, and surrounding districts, manufacture boots and shoes, of which Heusden sends to N. and Holland 1,000,000 pairs yearly. Gin is distilled at Schiedam, Delft, Rotterdam, and Amsterdam; distilleries (1887) nearly 400. Amsterdam has the largest diamond-cutting trade in the world, 10,000 persons depending on that branch of industry. Sugar-refining was carried on by 12 establishments (1888), and there were then also 30 beet-root sugar factories, 57 salt works, and 87 soap works. Paper is made chiefly in Holland and Gelderland. The leading letter-type founders are at Amsterdam and Haarlem. Manufactures of every kind are rapidly increasing in number, and adding to the material prosperity of the Netherlands. More than

1,000,000 cwt. of cocoa imported into the United Kingdom, 1888, was from N. The chief motive power is the windmill, which forms a never-failing element in the scenery; but of late years, steam is coming more into use.

Many people are employed in the immense inland shipping-trade which the canal network has fostered. Fishing, not only in the inland waters, the coasts, and bays of the North Sea, but also on the coast of Scotland, is vigorously pursued. In 1901 there were 5,851 vessels engaged in the fisheries, with crew numbering about 20,164. The produce of the herring fisheries in the North Sea was valued at $3,336,138. There are productive oyster beds, besides extensive fishings of cod, ling, turbot, flounders, soles, shrimps, haddock, etc.; and from the rivers, salmon, eels, perch, etc.

Exports, Imports, Shipping.—The Dutch have long been famed for the extent and value of their sea trade and their commercial enterprise. The total annual value of imports into Holland (partly for home consumption, partly in transit to other countries) 1870–80 ranges from $225,000,000 to $335,000,000. In 1880, the chief articles of import were coffee, sugar, rice, cotton, cotton goods, tallow, petroleum, iron, flour, grain, drugs, timber, wool, tobacco. The exports ranged from $150,000,000 to $260,000,000 a year, the chief articles being coffee, sugar, butter, cheese, cotton, drugs, guano, hides, iron, rice, spirits, cattle (many of the most important items being first imported). During this period, the total value of the imports from Great Britain largely decreased; the exports to Great Britain largely increased. In 1901 the total imports were $819,000,000; exports $697,200,000. In 1899 the mercantile marine comprised 417 sailing vessels and 235 steamers.

Religion.—At the census, 1899, there were 3,068,132 Protestants, 1,790,161 Roman Catholics, 103,988 Jews, and 132,102 belonging to small sects. The Protestants belong to various confessions, a large proportion of the clergy being 'advanced' in their views.

Language and Literature.—The language of the N., called in Britain and America usually *Dutch*, but by the Netherlanders *Nederduitsch* or *Nederlandsch*, is one of the Low German languages, or languages of the Aryan family spoken in the lowlands of the Teutonic part of Europe, in contrast to the High German of Upper Germany. The principal Low German languages are Old Saxon (and in some respects Gothic), modern Low German or Platt-Deutsch (spoken by some millions in n. Germany, and having a copious literature distinct from the literary High German, which is now the usual medium for all educated Germans), Anglo-Saxon or Old English, modern English, Dutch, Flemish, and Frisian. Frisian, considerably different from Dutch, is the popular tongue in a considerable part of the N. (see FRISIANS). Flemish (q.v.), hardly dialectally different from Dutch, and mainly distinguished by having another way of

spelling certain double vowels, is spoken in some parts of the kingdom of the N., as well as in the Flemish provinces of Belgium. The Dutch alphabet consists of the same letters as the English; but the vowels are sounded essentially as in French, while in inflection of nouns and construction of sentences and of words, the Dutch resembles the German. To form the plural *en* or *n* is added to the singular. The Dutch, with its almost unequalled facility for formation of compound and technical words, with its great breadth of inflections, and with its notable force and simplicity has some advantages over both German and English.

The early history of Dutch and Flemish can scarcely be separated; but the seat of literary culture was at first mainly in the region where the form now spoken is Flemish rather than Dutch: for the material common to both forms or dialects, see FLEMISH LANGUAGE AND LITERATURE. Dutch writers came to be of European fame in the 16th c.; and during the 17th c. Holland was not merely a powerful commercial and military state, but was pre-eminently in the front rank of European literature. Many of its most famous sons wrote mainly or wholly in Latin, as Erasmus, Grotius, Huygens, Spinoza, Boerhaave (see these titles). Hooft, historian and poet (1581–1647); the popular poet Cats (1577–1660); Vondel (1587–1679), a truly great poetical genius, are names of which any country might be proud. Van der Goes, Coster, Rotgans, Heemskerk, Brandt, are other vernacular writers of the same period. In the 18th c., French influence predominated; Van Haren, Bellamy, Van Deken, are notable representatives of the period. In the 19th c., there was a revival of national feeling, represented in literature by Rhijnvis Feith and the greatest of modern Dutch poets, Willem Bilderdijk (1756–1831); Tollens (1780–1856) is a well-known poet; and Van Lennep (1774–1853) is a powerful romance writer. Holland did much for classical philology and for science in the 17th and 18th c.; was long a centre of theological scholarship (in which department it has again become prominent); and in art, the names of Rembrandt, Gerard Dow, Jan Steen, Paul Potter, and Ruysdaal indicate the share that the N. have had in European culture.

Education.—There are ancient universities at Leyden, Utrecht, and Groningen; since 1877, there has been a new university at Amsterdam, supported by the municipality. The four universities have more than 3,000 students. The Polytechnic Institute at Delft has 275 pupils. There are Latin schools in the chief towns. There are also the Royal Military and Naval Acad. at Breda, and that for engineers and the India civil service at Delft; seminaries in several places for the training of the Rom. Cath. clergy; and others, especially in Amsterdam, for those of the smaller Prot. sects; and many literary, scientific, and agricultural institutes.

Each community or parish must have, at least, one

elementary school, supported from the local public funds, in which reading, writing, arithmetic, history, geography, etc., are taught. A higher class of schools includes also foreign languages. All are under government inspectors, and the teachers must undergo stringent examinations on all the branches before obtaining permission to teach. Many society or subscription schools have been erected all over the land, with a normal school at Nymegen, not under government surveillance, and including religious instruction, which is excluded from the national public schools. There are several national normal schools. Under the provisions of the Primary Instruction law of 1878, the state pays 30 per cent. of the expenditure on the public schools, and the communes or parishes 70 per cent. In 1901 there were 3,274 public schools and 2,403 private schools. There were also 4 public universities, 29 classical schools, and 152 schools for the working class; 11 navigation schools, and a great number of special schools. It is believed that of the rural population about 20 years ago, a fourth of the men and a third of the women could neither read nor write.

Army, Navy, etc.—The regular army on foot of war consists in all abt. 68,000 men, exclud. officers: in peace (1901) 25,438 men and abt. 1,928 officers. It is composed of volunteers, and of a varying proportion of men drawn by lot for five years' service. There is also a local force, called the Schuttery, drawn by lot from those between 25 and 34 years of age, to assist in keeping order in peace, and in case of war, to act as a mobile corps, and do garrison duty. If attacked on the land side, 90,000 men are required for the defenses, and if by land and sea, 106,000. The first, or Maas line of defense, is formed by Maastricht, Venlo, Graves, Bois-le-Duc Woudrichem, Geertruidenberg, Willemstad, Breda, and Bergen-op-Zoom. The second line is formed by Nymegen, Forts St. Andries and Loevestein and Gorinchem. The inner line of Utrecht is formed by various forts from Naarden, Utrecht to Gorinchem, which, by inundations, can make the provinces of North and South Holland into an island. There are many other forts, batteries, and strongholds at the mouths of the rivers, and a new line of defense was agreed upon 1874.

There were 6 large armored cruisers, 16 gunboats, 5 small gunboats, 3 unarmored monitors, beside numerous torpedo boats for coast and harbor defense.

The navy consisted in 1901 of 15 modern ships.

Revenue, Expenditure, etc.—The revenue of 1901 was est. $65,000,000, and the expenditure at $63,000,000. The principal receipts are from direct taxes, excise, indirect taxes, import and export dues. The India revenue, 1890, was estimated $55,000,000, expenditure $60,000,000. The E. India colonies, formerly a burden, have long been a source of profit.

From the national debt there was paid off, 1850-74, $123,408,419; in 1880, the debt amounted to $382,091,-

909; and the annual interest payable on it was $11,314,-080. In 1902 the debt proper was more than $254,749,000, beside $6,000,000 in paper money. The material prosperity of the N. is increasing, and probably not less than $1,500,000,000 is invested by N. capitalists in the funds of other nations.

Colonies.—The colonies of the N. are said to have an area of more than 700,000 sq. m. (more than three times the area of the German Empire); pop. abt. 35,000,000. The colonies are in two groups: (1) the E. Indian possessions, including Java and Madura, Sumatra, the Moluccas, Celebes, Timor, parts of Borneo, and part of New Guinea; and (2) the W. Indies, of which the chief are Surinam and Curaçao. The factories on the coast of Guinea were sold to Great Britain 1872. For the principal colonies, see the separate titles.

Government, Franchise, etc.—The govt. is a limited constitutional monarchy, hereditary in the male line, and by default of that, in the female. The crown-prince bears the title, Prince of Orange, and attains his majority at the age of 18, when he takes his seat in the council of state. The executive is vested in the king, with a council of state composed of 12 members, nominated by the sovereign, and the ministers of the Interior, Foreign Affairs, Finance, War, the Colonies, Marine, and Justice, the last-named taking charge of ecclesiastical affairs through two administrators, or under-secretaries of state, for the Prot. and Rom. Cath. Churches. The legislative power is shared by the king and the two chambers of the states-general; the first chamber having 39 members, elected for nine years by the provincial states, one-third of their number retiring every three years. The second chamber has 80 members chosen by electors numbering (1882) 126,290, above 23 years of age, who pay from about $8.25 to about $43.80 of direct taxes, according to the size and importance of the electoral district. These are elected for four years, one-half of the chamber retiring every two years. For members of the town councils, the electoral qualification is half the above sums. The members of both chambers must be 30 years of age before the day of election, and those eligible for the first chamber are the nobility. This exceedingly high franchise, which, in Amsterdam, is a higher direct tax than the rental qualification of Great Britain, makes an election a thing of no interest except to a few. In 1871, only 36·2 per cent. of the electors of N. Holland gave their votes, and the maximum in any place was 66·9 per cent. in Limburg, 62·5 in N. Brabant, the average being 48·6.

The king nominates the governors of provinces, the burgemeesters of every city, town, or village, and a host of other officials. The cities, towns, and rural parishes are governed by a council, burgemeester (mayor or provost), and wethouders (aldermen orbailies). The council consists of from 7 to 39 members, according to pop., chosen for six years, one-third part retiring every two

years. The council selects out of their number 2 to 4 wethouders for six years, one-half retiring every third year. These with the burgemeester, form the local executive. The law departments are the high council, the provincial courts of justice, those of the arrondissements and cantons; appeal in many cases being open from the lower to the higher courts.

History.—Nothing is known regarding the original inhabitants of the N.: but about a century and a half before our era, the people known as the Batavi came out of Hesse, where they were living in hostility with their neighbors, and settled down between the Rhine and the Waal. At this time, the Frisians occupied the country n. of the Rhine to the Elbe. The Batavi and Frisians differed little in appearance, manner of life, and religion. They clothed themselves with skins, lived by fishing, hunting, and pasturing cattle, possessing horses, cows, and sheep; were faithful, open-hearted, chaste, and hospitable. The songs of the bards were their literature and history. Warlike and brave, they selected their leader for his courage and prowess, were armed with the bow and a short spear. They worshipped the sun and moon, and held their meetings in consecrated woods.

The Romans having subdued the Belgæ, next attacked the Frisians, who agreed to pay a tribute of ox-hides and horns, but continued restless and rebellious. The Batavi became allies of Rome, paying no tribute, but supplying a volunteer contingent, chiefly of cavalry, which decided the battle of Pharsalia in favor of Cæsar, and formed a gallant band of the Roman armies in all parts of the empire. About A.D. 70, Claudius Civilis, a Batavian, whose original name has not been preserved, made a bold effort to overthrow the Roman power in Rhenish or Germanic Gaul, but was compelled to sue for peace. Toward the close of the 3d c. began the inroads of the Franks, followed by the Saxons and other races; and in the 5th c., the Batavi had ceased to exist as a distinct people. The Franks continued to spread, and with them the Christian religion, Dagobert I., one of their princes, erecting a church at Utrecht, which, 695, became the seat of a bishopric. The Frisians were opposed to, and the last to embrace, Christianity, to which they were forcibly converted by Charles Martel. At the end of the 8th c., all the Low Countries submitted to Charlemagne, who built a palace at Nymegen, on the Waal. The feudal system now began to develop itself, expanding into dukedoms, counties, lordships, and bishoprics, which the dukes, counts, and bishops, especially the counts of Holland and bishops of Utrecht, endeavored to enlarge and to rule over with as little submission to their superior as possible. The Crusades weakened the power and drained the resources of the nobles and priesthood, so that during the middle ages, cities began to assume importance, strengthen themselves with walls, choose their own rulers, and appear in the state meetings. In 1384, the county of Flanders passed, through marriage, to the

Duke of Burgundy, whose grandson, Philip the Good, made it his special life-effort to form the N. into a powerful kingdom. He bought Namur, inherited Brabant with Limburg, and compelled Jacoba of Bavaria to resign Holland and Zeeland. Charles V., as heir of the house of Burgundy, inherited and united the N. under his sceptre, and the country attained prosperity, through the encouragements which he gave to commerce and shipping. Philip II., who succeeded his father, 1555, by his harsh government and his persecution of the Reformers, excited the N. to rebellion, which, after a struggle of 80 years, resulted in the firm establishment of the Republic of the United Provinces. The founder of the independence of the N. was William of Nassau, Prince of Orange, called in history the Silent, who freely sacrificed his own property, and put forth every effort to unite the discordant states of the south with those of the north in resisting the Spanish yoke. Retiring to Holland, and banding together several provinces for mutual defence, by an agreement at Utrecht, 1579, he perseveringly opposed the efforts of Spain; and 1609, the independence of the United Provinces (whose boundaries nearly coincided with those of the present kingdom of the N.), was virtually acknowledged by the Spanish king, an armistice for 12 years being signed at Antwerp, Apr. 9. The struggle was renewed and carried on till 1648, when all the powers acknowledged the independence of the United Provinces by the treaty of Münster, while the Belgic provinces, divided among themselves, remained submissive to Spain and to the Rom. Cath. Church.

Prince William the Silent did not live to see his efforts for freedom crowned with success. Excited by religious fanaticism, and the hope of a great reward, Balthazar Gerard or Guion, 1584, shot the prince in his house at Delft, from a narrow passage, as he was stepping from the dining-room to ascend an adjoining stair which led to the second floor. With the 17th c., the United Provinces began to advance in power and wealth, their ships visiting all parts of the world. Meanwhile, the contest between the Arminians and Calvinists broke out, and raged with fury many years; Grotius and others fleeing to other lands, and the statesman Oldenbarneveld suffering on the scaffold at the age of 72. The United Provinces were presided over by the Princes of Orange till the troubles at the end of the 18th c. began the long European war, which the battle of Waterloo brought to a close. The national convention of France having declared war against Great Britain and the Stadtholder of Holland, 1793, French armies overran Belgium, 1794; and being welcomed by the so-called patriots of the United Provinces, 1795, Jan., William V. and his family were obliged to escape from Scheveningen to England in a fishing junk, and the French rule began. The United Provinces now became the Batavian Republic, paying about $41,352,000, for a French army of 25,000 men, besides giving up important parts of the country along

yarns, woolen stuffs, various goods, precious stones, and money, to the value of $1,044,457, were sent to Netherlands-India, Singapore, British India, China, Japan, and Surinam. The company also advance money to planters and manufacturers in the colonies, who bind themselves for a number of years to consign their produce. They are also owners of a large sugar plantation, Resolutie, in Surinam. The present capital is 36,140,000 guilders, or nearly $15,000,000. The commission paid by govt. is a chief source of profit. For 1875, the net gain was $877,422, from which the shareholders received 5⅕ per cent. The result would have been more favorable had not heavy loss been sustained in the Japan trade.

The success of the Trading Company depends mainly on the culture system, introduced into Java, 1830. Under native rule, the land belonged to the princes, and the cultivators paid one-fifth of the produce, and one-fifth of their labor as ground-rent. The Dutch, by conquest, are now proprietors of the greater part of the island, and exact the old produce rent, relaxing the labor to one-seventh, and causing the holders of crown-lands to plant one-fifth of their cultivated fields with the crop best adapted for the soil and required for the European market. The govt. also has supplied, free of interest, enterprising young men with the capital necessary to erect and carry on works for preparation of the raw materials, to be repaid in ten yearly instalments, beginning with the third year. Sugar, tobacco, and tea are prepared by contractors; indigo, cochineal, coffee, cinnamon, and pepper by the natives under European surveillance, all passing into the Trading Company's factories for shipment to the Netherlands. The objections to the system are, that it does not leave the labor of the natives free, and that the passing of so much of the export and import trade through one favored company injures the general merchant. On the other hand, it must be said that the Dutch govt. only carries out the old law, and it is therefore not regarded by the peasantry as an infringement of their rights; and the merchants and capitalists of the Netherlands did not of themselves put forth sufficient efforts to work out the natural capabilities of Java when it returned under Dutch rule.

NETHINIM, n. plu. *nĕth'ĭ-nĭm* [Heb.—from *nathan*, to give—*lit.*, those given to God]: among the *anc. Jews*, the servants of the priests and Levites about the Temple.

NETLEY, *nĕt'lĭ*, Royal Victoria Hospital at: superb building, on the shore of Southampton Water, England, for the reception of invalids from the army on foreign service, and from among the troops serving in the adjoining military districts. In times of peace, it is necessary to use only a portion of the vast structure, which gives accommodation for 1,000 patients, with power to increase the number. The medical staff varies in proportion to the work to be done. Attached is the Medical School for candidates for the army medical de-

partment. N. is also the headquarters of the female nurses of the army, who are under the control of a lady supt. stationed here. Some questions have been raised as to the salubrity of the site, adjacent as it is to the wide banks of mud which Southampton Water uncovers at low tide.

NETS: fabrics in which the threads cross each other at right angles, leaving a comparatively large open space between them; the threads are also knotted at the intersections. In this respect, netting differs essentially from weaving, where the intersecting threads simply cross each other. The open spaces in nets are called *meshes*, and these correspond in size with an instrument used in net-making, consisting of a flat piece of wood or other hard substance, usually about the shape and size of a common paper-knife. In addition to this, a peculiar kind of needle (see cut) is used, upon which a large quantity of the thread is placed, by winding it from end to end between the forked extremities; the holes are

used to insert the end of the thread, to prevent it slipping off at the commencement of the winding. The art of net-making has been practiced from earliest times by the most savage as well as the most civilized nations. Even where the art of weaving was quite unknown, as in some of the South Sea Islands when first discovered, that of netting was well understood; and it is easy to see that the human race could not help learning the value of this art from seeing how frequently land and water animals become entangled in the shrubs and weeds through which they attempt to pass; hence we find among savage tribes, almost universally, nets are used not only for fishing but also for entrapping land animals. We have ample illustrations of the uses of net for both purposes in the bas-reliefs of Assyria, Greece, and Rome, and in the mural paintings of Egypt.

Until recently, nets have been always made by hand, and generally the thread has been a more or less thick twine of hemp or flax, the thickness of the twine and the size of the mesh depending on the kind of fish for which it was made; recently, however, great improvements have been made in the manufacture of nets by delicate automatic machinery. The raw materials are hemp, flax, and cotton, the last extensively employed for herring and sprat nets of late years. Hemp, however, is the chief material for net-making; and it is first passed in long rolls through a machine consisting of two rollers with blunt ridges, the upper of which is kept down on the material by a hanging weight, consisting of a loaded box suspended to a chain from the axle of the roller. After the fibre has passed through this, it is much more

supple than before, and is then *hackled;* this process also is done by machinery. It subsequently passes through the carding, roving, and spinning processes, as in all other kinds of yarn, and is finally twisted into threads or twines of the required thickness. After the net comes from the loom, it goes to the finishers, who, by hand, make the addition of a kind of selvage, consisting of several thicknesses of twine, to give strength to the edges.

A great variety of nets are in use among fishermen, but the principal are the *seine*, *trawl*, and *drift nets*. The seine is a very long but not very wide net, one side of which is loaded with pieces of lead, and consequently sinks; the other, or upper, is buoyed with pieces of cork, and consequently is kept up to the surface. Seines are sometimes as much as 190 fathoms in length. When stretched out, they constitute walls of net-work in the water, and are made to inclose vast shoals of fish. The trawl is dragged along the bottom by the fishing-boat; and the drift-net is like the seine, but is not loaded with lead; it is employed usually for mackerel fishing. See CASTING-NET: FISHING.—Various kinds of nets are used in bird-catching (e.g., see CLAP-NET). Nets are used by gardeners to protect crops from birds; also to protect the blossoms of trees from frost, and it is wonderful how well this object is accomplished.

NETTLE, n. *nĕt'l* [Ger. *nessel;* Low Ger. *nettel;* Norw. *netla;* Dan. *nælde*, a nettle: comp. Icel. *nötr*, a nettle—from *nötra*, to shiver]: a well-known stinging-plant; the *Urĭcă dioĭca*, *U. ūrens*, etc., ord. *Urticācĕæ* (see below): V. to irritate; to provoke; to excite feelings of displeasure or uneasiness in. NETTLING, imp. *nĕt'lĭng:* ADJ. irritating. NETTLED, pp. *nĕt'ld.* DEAD-NETTLE, a plant which does not sting, whose leaves resemble the true nettle; the *Lāmĭŭm album* with white flowers, the *L. purpūrĕŭm* with red flowers, ord. *Labĭātæ.*

NETTLE (*Urtĭca*): genus of plants of nat. order *Urticeæ*, having unisexual flowers, the male and female on the same or separate plants; the male flowers with a 4-parted perianth, and four stamens; the female flowers with a 2-parted perianth and a tufted stigma; the fruit an achenium. The species are herbaceous plants, shrubs, or even trees, many of them covered with stinging hairs, which pierce the skin when touched, and emit an acrid juice, often causing much inflammation and pain. When a N. is grasped in such a way as to press the hairs to the stem, no stinging ensues; but the slightest inadvertent touch of some of the species produces very severe pain. The stinging of the native nettles of western countries is insignificant in comparison with that of some E. Indian species. *U. crenulata* is particularly notable for the severity of the pain which it produces, without either pustules or apparent inflammation. The first sensation is merely a slight tingling, but within an hour violent pain is felt, as if a red-hot iron were continually applied, and the pain extends far from the original spot, continues for about

24 hours and then abates, but is ready to return in its original intensity on the application of cold water, and does not cease for fully eight days. Cold water has a similar effect in increasing or renewing the pain of all kinds of nettles. Still more formidable than this species is *U. urentissima*, the *Devil's Leaf* of Timor. In temperate climates a venomous, but rare species is the ROMAN N. (*U. pilulifera*); next is the SMALL N. (*U. urens*), frequent about towns and villages, and in waste and cultivated ground; while the least venomous is the most common and only perennial species, the GREAT N. (*U. dioica*), everywhere abundant, particularly near human habitations, or their former sites, whose desolation it makes manifest. The roots of nettles, boiled with alum, afford a yellow dye; and the juice of the stalks and leaves has been used to dye woolen stuffs of a beautiful and permanent green. The young shoots of *U. dioica* are used in parts of Scotland and other countries instead of spinach, and their peculiar flavor is much relished by some. Whatever it is that gives nettles their stinging power, is dissipated by boiling. The high value of nettles as food for swine, is well known to the peasantry of many countries; the Great N. is cultivated in Sweden for fodder of domestic animals; nettles are highly esteemed as food also for poultry, particularly for turkeys. The seeds are extremely nutritious to poultry; and are given to horses by jockeys, to make them lively when they are to be offered for sale. The stalks and leaves of nettles are employed in parts of England, for the manufacture of a light kind of beer, called *N. beer*, sold in some humble shops. The *bast* fibre of nettles is useful for textile purposes. Yarn and cloth, both of the coarsest and finest descriptions, can be made of it. The fibre of *U. dioica* was used by the ancient Egyptians, and is still used in Piedmont and other countries. When wanted for fibre, the plant is cut in the middle of summer, and treated like hemp. *N. Cloth*, or *Grass Cloth*, is a beautiful fabric made from Rheea (q.v.) fibre, or *Bœhmeria* (q.v.) *nivea*. See also GRASS CLOTH and CHINA GRASS.—The fibre of *U. cannabina*, native of Siberia, and of central Asia, is much used; and from that of *U. Whitlawi*, both fine lace and strong ropes can be manufactured. The fibre of *U. Japonica* is much used in Japan, and that of *U. argentea* in the South Sea Islands; that of *U. Canadensis* is used in Canada.—The seeds and herbage of *U. membranacea* are used in Egypt as emmenagogue and aphrodisiac; and somewhat similar properties are ascribed to *U. dioica*.—*U. tuberosa* produces tubers, which are nutritious, and are eaten in India, raw, boiled, or roasted.—Australia produces a magnificent tree-nettle, *U. gigas*, abundant in parts of New South Wales, ordinarily 25 to 50 ft. high, but sometimes 120 or 140 ft., with trunk of great thickness, and very large green leaves, which, when young, sting violently. In some places, it forms *scrub* forests, and its stinging leaves form a great impediment to the traveller.

NETTLE-RASH, or URTICARIA, *ĕr-tĭ-kā'rĭ-a* [Lat. *urtica*, a nettle]: common form of eruption on the skin. The eruption consists of wheals, or little solid eminences of irregular outline, and either white or red, usually both red and white, there being a white centre with a red margin. The rash is accompanied with great heat, itching, and irritation; the appearance on the skin and the sensation being like the appearance and feeling produced by the stinging of nettles.

The disease may be either acute or chronic. In the acute form, feverishness usually precedes the rash by a few hours, though sometimes they commence together. The disorder is usually connected with some derangement of the digestive organs, and it may often be traced to the imperfect digestion of special articles of food, such as oatmeal, strawberries, cucumbers, mushrooms, and especially oysters, mussels, and crabs, which are eaten with perfect impunity by most persons. An hour or two after the offending substance has been swallowed, there is a feeling of nausea, with oppression about the pit of the stomach; the patient often complains of giddiness, and the face frequently swells; the skin then begins to tingle, and the eruption breaks forth; vomiting and diarrhea often supervene, and act as a natural cure; but even when they do not occur, the violence of the rash usually subsides in a few hours, and the disorder altogether disappears in a day or two. In mild cases the rash appears without fever or any other constitutional or gastro-intestinal symptoms.

The chronic form is often very troublesome, and frequently comes on periodically in the evening. Cases are reported in which persons have been afflicted for ten years continuously by this form of the disease. Patients have left off all their customary articles of diet, one by one, without in all cases meeting with relief; hence it may be inferred, that though the disease is usually dependent on a disordered condition of the digestive organs, it is not always the consequence of any special offending article having been swallowed.

The main treatment of the acute form consists in expelling the offending matter by an emetic and by purgatives, and the cure is thus usually completed. In the chronic form, the patient should, in the first place, determine whether the rash is caused by any particular article of diet, and if this seems not to be the case, an attempt must be made to improve the state of the digestive organs. A few grains of rhubarb taken daily, just before breakfast and before dinner, will sometimes effect a cure. Dusting the itching surface with flour or talcum sometimes affords temporary relief; and a still more useful application is a lotion composed of a drachm of the carbonate of ammonia, a drachm of the acetate of lead, half an ounce of laudanum, and eight ounces of rose-water.

NETTLETON, *nĕt'tĕl-ton*, ASAHEL, D.D.: 1783, Apr. 21—1844, May 16; b. North Killingworth, Conn. After graduating at Yale College 1809, he studied theology at Yale Divinity School; and, 1811, was licensed as a Congl. preacher; but was not ordained till 1817, when he became an evangelist or revivalist. He had intended entering the mission field, but finding his preaching so acceptable and effective at home, he decided to remain, and for several years he conducted revivals in 40 of the chief towns of Conn., Mass., and N. Y. In 1822 he suffered from a severe attack of typhus fever; but 1824 resumed his labors, publishing also a volume of *Village Hymns*. His health still being feeble, he went, 1827, to Va., returning 1829, and preaching in New England and N. Y. till 1831, when he visited Great Britain. In 1832 he declined a professorship in the new theol. seminary at East Windsor, but took up his residence there and lectured sometimes. His style of preaching was very impressive, his manner solemn, almost to awfulness, his subjects usually doctrinal. He maintained the old and strict theology as against the New Haven theology, then beginning to have currency among the Congl. churches.

NETTLE-TREE (*Celtis*): genus of deciduous trees of nat. order *Ulmaceæ* with simple and generally serrated leaves, considerably resembling those of the Common Nettle, but not stinging. The genus is distinguished chiefly by its fruit, a fleshy, globose, or sub-globose 1-celled drupe. The Common or European N.-T. (*C. Australis*) is a native of s. Europe, w. Asia, and n. Africa. It grows to the height of 30–40 ft., and is a very handsome tree, often planted along public walks in s. France and n. Italy. The wood is very compact, very durable, and takes high polish. It was formerly much imported into Britain for the use of coachmakers. It is used in Italy by musical-instrument makers for flutes and pipes. The flowers are inconspicuous, axillary, and solitary; the fruit black, resembling a small wild cherry, not eatable till after the first frosts, and then very sweet. The kernel yields a useful fixed oil. The tree thrives in s. England.—*C. occidentalis* is a native of N. America from Canada to Carolina, sometimes there called the N. T., sometimes the SUGAR BERRY. Its leaves are much broader than those of *C. Australis*, its fruit very similar. It is a much larger tree, attaining a height of 60–80 ft.—Another American species, *C. crassifolia*, often called HACKBERRY or HAGBERRY, and HOOP ASH, is very abundant in the basin of the Ohio and westward of the Mississippi. It grows to a great height, but the trunk is not very thick. The wood is not much valued, but is said to make very fine charcoal. The fruit is black, and about the size of a pea.—The inner bark of *C. orientalis*, consisting of reticulated fibres, forms a kind of natural cloth, used by some tribes of India.—A number of other species are natives of warm parts of America and Asia.

NEU-BRANDENBURG, *noy-brân'dėn-bûrċh:* town of Mecklenburg-Strelitz, the prettiest and, after the capital, largest in the duchy; on Lake Tollens, 17 m. n.n.e. of Neu-Strelitz. It is regularly built, contains two churches, a castle, etc., is the centre of a picturesque district, and the seat of considerable industry. About half a league from N., on a rock overlooking Lake Tollens, stands the ducal pleasure-castle of Belvedere, commanding, it is said, the most beautiful prospect in Mecklenburg.—Pop. of town (1880) 8,406; (1895) 9,720.

NEUBURG, *noy'bûrċh:* ancient town of Bavaria, picturesquely situated on the right bank of the Danube, 29 m. n.n.e. of Augsburg. It contains a handsome palace, the château of the Dukes of Bavaria of the line of Pfalz-Neuburg, who resided here 1596–1742. The palace contains a collection of ancient armor. Brewing and distilling are carried on, and there is considerable commercial trade on Danube. Pop. (1880) 9,134; (1895) 8,204.

NEUCHATEL, or NEUFCHATEL, *nėh-shâ-tĕl';* known also as NEUENBURG, *noy'ėn-bûrċh:* canton in w. Switzerland, between Lake N. and the French frontier; greatest length about 30 m., average breadth 11 m.; 310 sq. m. N. lies in the midst of the Jura Mountains, four chains of which, running from n.e. to s.w., traverse the canton, and are separated by elevated longitudinal valleys. The most easterly of these is a broken chain, running parallel to the Lake of N., on whose banks, and on the second and lower ranges beyond it, the vine is carefully cultivated. This second chain has five principal passes, the highest of which, La Tourne, has an elevation of about 4,000 ft. The third and fourth ranges, abutting on France, consist mostly of barren hills, separated by elevated valleys; but here and there these high lands are well wooded and fruitful, producing corn, good pasture, fruits, etc. The greater number of the numerous streams which water the canton flow into the Rhine. Among these mountain torrents, the principal are the Reuse, the Seyon, and the Serriere, the two former of which, with the rivers Orbe and Broie, are the feeders of the Lake of N. (q.v.) The climate of N. varies greatly with the locality; temperate on the shores of the lake, cooler in the valleys, and severe on the mountains-sides.

The natural products are iron ores, coal, asphalt (the most valuable mineral product), and fruit, including grapes—from which good red and white wines are made—timber and corn, though the latter is not sufficient for the home consumption. The rearing of cattle is an important industry, and much cheese is exported; but the specialty of the canton is watch-making, which occupies 18,000 to 20,000 persons, and is prosecuted in detail at the homes of the work-people in the rural districts, where some families manufacture only special parts of the machinery, while others are engaged solely in putting together the separate portions: the watches thus prepared are exported in large quantities to every part

of Europe and America. The annual value of the total product of watches (1880) exceeded $5,000,000. The chief seats of the manufacture are the retired and lofty villages of Chaux-de-Fonds (q.v.) and Le Locle (q.v.) Muslin-printing employs more than 10,000 persons, and lace is extensively made by the country-women of the Val de Travers.

The history of N. was identical with that of Burgundy, till the 11th c.; and after the principality had been for a time incorporated with the territories of the Counts of Chalons, to whom it had been granted 1288, by Rudolph of Hapsburg, it passed to the House of Longueville. In 1707, on the extinction of the N. branch of the latter family, 15 claimants advanced more or less valid pretensions to the N. territory. Frederick I. of Prussia, who based his claim to the principality of N. on the ground of his descent from the first Prince of Orange, a descendant of the House of Chalons, was the successful candidate; and from his time it continued associated with Prussia till 1806, when Napoleon bestowed it upon General Berthier; but in 1814, it was restored to the House of Brandenburg. This connection with the Prussian monarchy has been wholly dissolved since 1857, and N. is now a member of the Swiss Confederation—Pop. (1880) 103,732; (1900) 126,279. Prot. except 9,000 to 10,000 Rom. Catholics. More than 17,000 families speak French, and 2,700 German.

NEUCHATEL', or NEUFCHATEL', or NEU'ENBURG: chief town, and cap., of the canton of N. It is on a magnificent site on the n.w. shore of the Lake of N. and is noted for its many charitable and literary institutions, largely gifts of private munificence; and for the beauty of its environs. The trade is considerable, chiefly in wine, watches, lace, and liqueurs. Pop. (1901) 20,916.

NEUCHATEL' (or NEUFCHATEL,' or NEU'ENBURG), LAKE OF, known sometimes as the LAKE OF YVERDUN: lake of Switzerland, in the valley of the Aar; 25 m. long, 6 m. in greatest breadth, 500 ft. in greatest depth; 92 sq. m.; 1,424 ft. above sea-level. The Thiéle which flows into it at its s.w. angle is also its outlet through the neighboring lake of Bienne into the Aar. The n.w. shore is cultivated and peopled. The scenery has far less grandeur and beauty than that of some other Swiss lakes. The lake abounds in fish, and bears a large traffic. It is liable to severe westerly storms.

NEU-CHWANG': see YING-TZE.

NEUHAUS, *noy'howss:* town of Bohemia, on the Nescharka, about 70 m. s.s.e. of Prague. Its palace, belonging to Count Czerny, is a splendid edifice. Cloth, paper, and chemical products are manufactured. Pop. (1880) 8,703; (1890) 8,502.

NEUILLY, *nĕh-yē*, called sometimes NEUILLY-SUR-SEINE, *-sür-sān'*, in distinction from several less important towns: town of France, dept. of Seine, on the right bank of the river Seine, immediately n. of the Bois de Boulogne. Neuilly may now be regarded as a suburb of Paris, with which it is connected by several streets, or roads, lined with numerous villas. Here, near the Seine, and in a large and beautiful park, formerly stood the Château de Neuilly, built by Louis XV., and the favorite residence of Louis Philippe, which was burned at the revolution in 1848. The park was also then divided into lots for sale, the consequence being a rapid increase of houses. Neuilly has manufactures of porcelain and starch, chemical works and distilleries. When Louis Philippe abdicated, and took refuge in England, he assumed the title Count de Neuilly. Pop. (1901) 37,493.

NEURAL, a. *nū'răl* [Gr. *neuron*, a sinew, a nerve]: pertaining to the nerves or nervous system; denoting the arch of the vertebra. NEURAL ARCH, that which protects the spinal cord.

NEURALGIA, n. *nū-răl'jĭ-ă* [Gr. *neuron*, a nerve; *algos*, pain]: violent pain of a nerve, as in the head or face. NEURAL'GIC, a. *-jĭk*, pertaining to or afflicted by neuralgia. —*Neuralgia* designates pain of a purely nervous character, usually unaccompanied by inflammation, fever, or any appreciable change of structure. The pain occurring in paroxysms, usually followed by complete remissions, is of every possible degree and character, described in different cases as piercing, tearing, burning, etc. These paroxysms may occur at intervals of a few seconds only, or daily or on alternate days, or separated by much longer intervals, often, but not always, of regular length. With the pain there is frequently spasmodic twitching of adjacent muscles. The duration of the disease is very uncertain. The patient may have only a single attack, or he may have recurring attacks for months, years, or even for his whole life; it is, however, very seldom that the disease occurs but once. Death scarcely ever results directly from this affection, but the pain may, by its severity and persistence, gradually undermine the constitution.

The disease may attack any part of the body where there are nerves; but in no part does it occur so frequently as in the face, when it is popularly known as *Tic-douloureux;* its seat being in the facial branches of the fifth pair of nerves (the trifacial—see NERVOUS SYSTEM, fig. 2). This is the most frequent form of severe neuralgia; the reason probably being, that the trifacial nerve, lying superficially, and being distributed over a part of the surface usually unprotected by any artificial covering, is liable to be affected by atmospheric or other external influences. It may be due to disease of the Gasserian ganglion. Among other seats of neuralgia are

the arm, especially the fore-arm, the spaces between the ribs, especially between the sixth and ninth, and the lower extremity, where it most frequently affects the sciatic nerve, giving rise to the affection known as Sciatica, which, however (like tic-douloureux), is not always pure neuralgia. See SCIATICA.

The causes of neuralgia are various. Excluding inflammation of the nervous trunk or *neuritis*, the pain may be excited by a tumor pressing on the nerve, or originating in its substance; or by roughness of a bony surface with which the nerve may be in contact, as when it passes through a foramen; or it may be due to tumors within the cranium, or a morbid state of the spinal cord. Sometimes, again, irritation applied to *one* branch of a nerve will give rise to pain at the extremity of *another* branch of the same nerve, the sensation being reflected along the branch not directly exposed to the irritation. In this way we may explain the pain in the shoulder which often accompanies disease of the liver; the pain in the thigh often associated with irritation of the kidney; the pain in the left arm, which is often coincident with disease of the heart, etc. Persons suffering from debility, anæmia, and a gouty or rheumatic constitution, are so especially liable to neuralgia that these conditions—as also exposure to malarious influences—must be placed among the predisposing causes. Among the exciting causes exposure to cold and wet is perhaps the most frequent; but fatigue, strong mental emotions, abuse of tea, coffee, tobacco, and alcoholic drinks, a wound or bruise, the retrocession of gout, rheumatism, or cutaneous eruptions, etc., occasionally excite the disease.

The resources of the materia medica have been exhausted in searching for remedies for this cruel disease. In cases of neuralgia unaccompanied by inflammation, or evident existing cause, iron is among the best remedies; there can be no doubt that when the disease is accompanied with debility and paleness no remedy is likely to be serviceable. In obstinate neuralgia great relief, or even absolute cure, is often obtained by the administration of cod-liver or olive oil or by increasing the amount of fat in the dietary—cream, butter, bacon, etc. There is indeed a saying that neuralgia is the cry of a nerve for fat. If the digestive organs are out of order, the neuralgia may frequently be removed or alleviated by correcting their unhealthy state. Thus, carbonate of soda dissolved in water has given immediate relief on swallowing it, merely by correcting acidity in the stomach. More often the cause of offense appears to be in some part of the intestines, and purgatives do good. When the paroxysms recur periodically at intervals of 24 or 48 hours they may be due to malaria, and sulphate of quinine in large doses between paroxysms, or the use of arsenic in small doses three times a day, may cure. Neuralgia, being a nervous affection, is occasionally

cured by applications acting on the mind more than the body.

NEURAPOPHYSIS, n. *nū'ră-pŏf'ĭ-sĭs* [Gr. *neuron*, a sinew, a nerve, and Eng. *apophysis*]: in *anat.*, the part projecting from a vertebra which aids in forming the canal that protects the spinal cord.

NEURASTHENIA: a functional nervous disease characterized by extreme weakness of body and mind. It is caused in susceptible subjects by mental overstrain combined usually with physical overwork, resulting from worry, prolonged anxiety, long hours of mental application, especially if associated with the abuse of narcotics —alcohol, opium, or tobacco. It may be caused also, or aggravated, in predisposed subjects by eyestrain from defects in the formation of the eye, especially astigmatism, when uncorrected by glasses. The symptoms are of protean character; they may be purely mental, or mental accompanied by gastric or cardiac disturbances, or by extreme muscular weakness. The mental symptoms may take the form of irritability and fretfulness, suspicion, an impelling force to work, although the work so done is always inefficient, or an aversion to work and a total inability to concentrate the mind on any subject. The disorder is more common in men than in women, by reason of their greater liability to business worries and in a measure to their more frequent addiction to the abuse of alcohol and tobacco.

The treatment of neurasthenia, when the patient is docile and has the time and the means to devote to the necessary regimen, is in most cases satisfactory in its results. Its object is to rehabilitate the exhausted nervous system and consists sometimes in rest, sometimes in moderate exercise of the body, but always in mental rest. Aids in treatment are tonics, nourishing food, electricity, hydrotherapy, massage. Particular attention should be paid to the proper functioning of the stomach and bowels, as auto-intoxication is sometimes a potent factor in the causation of neurasthenic symptoms. The eyes should be examined and properly fitted glasses should be worn if visual defects are present. A sea voyage is often beneficial, and change of scene is to be recommended when the physical condition is such that travel does not fatigue.

NEURECTOMY, n. *nū-rĕk'tŏm-ĭ* [Gr. *neuron*, a nerve; *tomē*, a cutting; *temnō*, I cut]: operation of cutting out a nerve or part of a nerve.

NEURICITY, n. *nū-rĭs'ĭ-tĭ* [formed on analogy with electricity—from Gr. *neuron*, a nerve]: in *physiol.*, scientific name for what was formerly known as nervous force or nervous fluid.

NEURILEMMA, n. *nū'rĭ-lĕm'mă* [Gr. *neuron*, a sinew, a nerve; *lemma*, skin, bark]: in *anat.*, the delicate fibrous sheath of a nerve. NEU'RILEM'MATOUS, a. *-mă-tŭs*, connected with the neurilemma.

NEURIN, n., or NEURINE, *nū′rĭn* [Gr. *neuron*, a nerve]: the matter which composes the nervous system, containing an alkaline base. NEURITIS, n. *nū-rī′tĭs*, inflammation of a nerve. The disease is caused by the action of some poison in the blood—lead, alcohol, tobacco, etc., or the toxins elaborated by the germs of an infectious disease, such as typhoid fever. The symptoms closely resemble those of neuralgia. The treatment consists in removal of the cause, if this can be discovered (the abuse of alcohol is perhaps the most frequent cause, and next to that auto-intoxication from constipation or excessive meat-eating), and in the administration of tonics and fats. Anodynes may be required temporarily for the relief of the pain. NEURO-, *nū′rō-*, indicating connection with a nerve or nerves.

NEUROGLIA, n. *nū-rŏg′lĭ-ă*, usually *nū-rŏ-glī′ă* [Gr. *neuron*, a nerve; *glia*, glue]: a net-work of fine connective tissue which traverses the nervous matter both in the brain and spinal cord.

NEUROLOGY, n. *nū-rŏl′ŏ-jĭ* [Gr. *neuron*, a nerve; *logos*, a discourse]: a scientific description of the nerves of animal bodies; the science that deals with the diseases of the nervous system. NEU′ROLOG′ICAL, a. *-lŏj′ĭ-kăl*, pertaining to. NEUROL′OGIST, n. *-rŏl′ŏ-jĭst*, a writer on the nerves.

NEUROMA, n. *nū-rō′mă* [Gr. *neuron*, a nerve]: a fibrous tumor developed in the sheath of a nerve.

NEUROPATHY, n. *nū-rŏp′ă-thĭ* [Gr. *neuron*, a nerve; *pathos*, suffering]: a term applied generally to affections of the nervous system.

NEUROPODIUM, n. *nū′rō-pō′dĭ-ŭm* [Gr. *neuron*, a nerve; *podes*, feet]: the ventral or inferior division of the foot tubercle of an Annelid; the ventral oar.

NEUROPTERA, n. plu. *nū-rŏp′tėr-ă*, or NEUROP′TERANS, n. plu. *-tėr-ănz* [Gr. *neuron*, a nerve; *pteron*, a wing]: an order of mandibulate insects, having four nearly equal and membranous wings, all adapted for flight, divided by their nervures into a delicate net-work of little spaces, and not covered with fine scales, as in the *Lepidoptera*. The wings are often extended horizontally when at rest, nearly as in flight; but the position is various. The form of the wing is generally somewhat elongated. The body is generally much elongated, particularly the abdomen. The head is often large, the compound eyes very large, and there are often simple or stemmatic eyes. The habits are predaceous, at least in the larva state; often also in the pupa and perfect states, the food consisting of other insects, often caught on the wing. The power of flight is accordingly great in many. The larvæ and pupæ are often aquatic. The females have no sting, and only a few have an ovipositor. The metamorphosis is complete in some, incomplete in others. Dragon-flies, May-flies, scorpion-flies, ant-lions, and ter-

mites, or white ants, belong to this order. NEUROP'TER, n. one of the order of *Neuroptera*. NEUROP'TERAL, a. *-tĕr-ăl*, or NEUROP'TEROUS, a. *-tĕr-ŭs*, nerve-winged; pertaining to the order *Neuroptera*.

NEUROPTERIS, n. *nū-rŏp'tĕr-ĭs* [Gr. *neuron*, a nerve; *pteris*, a fern]: a genus of fossil ferns occurring abundantly in the Coal-measures.

NEUROSIS, n. *nū-rō'sĭs*, NEUROSES, n. plu. *-sēz* [Gr. *neuron*, a nerve]: a disease which depends on some perverted nervous influence; an affection of the nervous system indicated by disordered sensation, volition, or mental expression, without any recognized lesion of parts, and sometimes without a discoverable adequate cause. Many abnormal conditions are now considered as neuroses; some of them result from nervous dyspepsia, shown by belching and eructation, by spasm and atony of the stomach, due to increased or decreased peristalsis, etc. Cardialgia and cardiospasm (functional disturbances of the heart) may produce such conditions. They are variously described, and include accident-neurosis, a neurosis following a severe injury; traumatic neurosis, following a severe wound; cyclist's neurosis, following excessive bicycle-riding; alcoholic neurosis, due to overuse of alcoholics; occupation-neurosis, indicated by spasmodic manifestations when attempting to perform movements peculiar to the employment of the individual, as the cramps of writers, milkers, etc.; and angioneurosis, a neurosis of the blood-vessels of a part. Herpes zoster is spoken of as a vasomotor neurosis, an exanthematous angioneurosis.

NEUROSKELETON, n. *nū'rō-skĕl'ĕ-tŏn* [Gr. *neuron*, a nerve, and Eng. *skeleton*]: the deep-seated bones of the vertebral skeleton connected with the nervous system.

NEUROTIC, n. *nū-rŏt'ĭk* [Gr. *neuron*, a nerve]: disease of the nerves; also a medicine used for strengthening the nerves. ADJ. seated in the nerves, or pertaining to them. As a noun the term was formerly chiefly applied in medicine to any substance—drug or poison—which acts especially on the nervous system, neurotics being classified as cerebral (morphine, etc.), cerebrospinal (as aconite), and spinal (as strychnine). This use of the word neurotics has become obsolescent, and the term is now mainly reserved for sufferers from nervous disease or excessive nervous activity.

NEUROTOME, n. *nū'rō-tōm* [Gr. *neuron*, a nerve; *tomē*, a cutting]: the nervous section or segment of the skeleton; a long, narrow, two-eyed scalpel employed in dissecting the nerves. NEUROTOMY, n. *nū-rŏt'ŏ-mĭ*, the dissection of a nerve. NEU'ROTOM'ICAL, a. *-tŏm'ĭ-kăl*, pertaining to. NEUROT'OMIST, n. one who dissects the nerves.

NEUSATZ, *noy'sâts*, or NEOPLAN'TA, or UJ-VIDÉK, *ô-ĕ-vē-dāk':* town of the Austrian empire in the Hungarian province of Bács, on the left bank of the Danube

opposite Peterwardein. Its origin dates from 1700, and by the year 1849 it numbered nearly 20,000 inhabitants. A bridge 840 ft. in length extends between Neusatz and the town and fortress of Peterwardein. Neusatz is the seat of the Greek non-united Bishop of Bács. 1849, June 11, it was taken from the Hungarian insurgents by the imperial troops, and was almost wholly destroyed. It has been rebuilt in excellent style. Neusatz, which has become a literary and religious centre for the Serbs of Hungary, is a station for steamers on the Danube, and has an important and active trade. Pop. about 30,000.

NEUSE, *nūs*, RIVER: stream in N. C., rising near the middle of the n. boundary of the state, and, after a s.e. course of 250 m., passing through a broad channel into Pamlico Sound, which communicates by several inlets with the Atlantic Ocean. The Neuse forms the harbor of New Berne.

NEUSIEDL, *noy'sēdl*, LAKE [Hung. *Ferto-tava, fĕr'to tŏh'vŏh*]: lake on the n.w. frontier of Hungary, 22 m. s.e. of Vienna; 23 m. in length, and about 6 m. in average breadth, with a mean depth of 13 ft. Its waters are light-green in appearance, and brackish in taste. The slopes of the Leitha Mountains in the vicinity produce excellent wine.

NEUSOHL, *noy'zōl* [Hung. *Beszterczc-Banya, bĕsstĕrt' sā-bân'yŏh*]: beautiful and thriving town of Hungary, chief town of the richest mining district in the country, in a hill-inclosed valley on the right bank of the Gran, about 85 m. n. of Pesth. The people are mostly employed in the copper and iron mines of the vicinity, in the smelting-houses, and in the manufacture of beet-root sugar, paper, colors, etc. Neusohl is an ancient town, the seat of a bishop, and contains a beautiful cathedral, a bishop's palace, and two evangelical churches, and several other handsome edifices. Pop. about 8,000.

NEUSS, *noyss:* ancient and flourishing manufacturing town of Rhenish Prussia, near the left bank of the Rhine, with which it is connected by the river Erit, 4 m. s.w. of Düsseldorf. Its church of St. Quirinus, a beautiful edifice, and a notable specimen of the transition from the round to the pointed style, is supposed to have been built 1209. Neuss is the principal grain market of the province, and carries on manufactures of woolen and other cloths, ribbons, hats, vinegar, etc. It is supposed to be the *Novesium* of the Romans, sacked by Attila 451. Pop. 28,500.

NEU'STADT, or WIENER-NEUSTADT, *vē'nĕr-noy'stât:* one of the most beautiful towns of Lower Austria, called, from its loyalty, 'the ever-faithful town' (*ewig getreue Stadt*); 28 m. s. of Vienna, on the Vienna and Gloggnitz railway, connected with the capital by a canal also. It is surrounded by a broad and deep ditch, and by a fortified wall pierced by four gates. The town is overlooked

by the large old castle of the Dukes of Babenberg, now a military academy for the preparatory instruction of officers of the line: it accommodates 400 to 500 pupils. The castle contains a fine Gothic chapel (date 1460), rich in painted windows. It is the burial-place of Emperor Maximilian I. 1834, Sep. 14, the whole town, with the exception of 14 houses, was destroyed by a dreadful conflagration, with loss of many lives. The new town has been laid out with great taste and regularity. The canal (40 m. in length) and the railway to Vienna, and the converging roads from Styria and Hungary, are sources of prosperity to Neustadt. In Neustadt machinery is extensively constructed; and sugar-refining and manufactures of silk, velvet, and cotton fabrics, fayence, leather, etc., are carried on. Pop. 28,700.

NEUSTADT-AN-DER-HARDT, *noy'stât-ân-dĕr-hârt:* small town of Rhenish Bavaria, charmingly situated on the Speyerbach, at the foot of the Hardt Mountains, 12 m. n. of Landau. Its church, with several tombs and curious monuments of the Counts Palatine, and with some ancient fresco-paintings, was finished in the 14th century. The Rhenish 'grape-cure' here draws many visitors. Neustadt-an-der-Hardt has manufactures of paper, starch, gold and silver plate, furniture, cloth, oil, brandy, etc. Pop. about 20,000.

NEUSTADT-EBERSWALDE, *noy'stât-ā'bĕrs-vâl-dĕh* (since 1876 called officially *Eberswalde* only): town of Prussia, province of Brandenburg, 28 m. n.e. of Berlin. It is well known for its mineral springs, and for its extensive and important manufactures in steel, iron, copper, brass, paper, and porcelain. Pop. 18,000.

NEU-STRELITZ, *noy-strā'lĭts:* city, capital and residence of the court of the grand-duchy of Mecklenburg-Strelitz, pleasantly situated in a hilly district, between two lakes, 60 m. n.n.w. of Berlin. It was founded 1733, is in the form of an eight-rayed star, and contains the ducal palace, with a library of 70,000 volumes, and having fine gardens. Pop. (1900) 11,340, supported chiefly from the expenditure of the court, and by brewing and distilling. A mile s. of the town is Alt-Strelitz, with the largest horse-market in the duchy.

NEUSTRIA, *nūs'trĭ-a,* or WEST FRANCE (*Francia Occidentalis*): name given in the times of the Merovingians and Carlovingians to the w. portion of the Frank empire, after the quadruple division of it in 511. Neustria contained three of these divisions. It extended originally from the mouth of the Scheldt to the Loire, and was bounded by Aquitania on the s., and by Burgundy and Austrasia (*Francia Orientalis*) on the e. The principal cities were Soissons, Paris, Orleans, and Tours. Bretagne was always loosely attached to Neustria, of which the strength lay in the Duchy of France. After the cession of the territory afterward called Normandy to the Normans, 912, the name Neustria soon fell into disuse.

NEUTER, a. *nū-tėr* [L. *neuter*, neither the one nor the other—from *ne*, not; *uter*, which of the two, one or other]: taking no part with either side; indifferent; of neither sex; neither active nor passive—applied to verbs: N. an animal fully developed which has no organs of generation, as the working-bee; a plant having neither stamens nor pistols; one who takes no side in a contest or controversy. NEU'TRAL, a *-trăl* [L. *neutrālis*]: not assisting or acting with either party; indifferent (see NEUTRALS): neither acid nor alkaline: in *chem.*, applied to salts composed of an acid and a base in such proportions that they counteract or render imperceptible each other's properties (see SALTS). NEU'TRALLY, ad. *-lĭ*. NEUTRAL'ITY, n. *-trăl-ĭ-tĭ*, the state of taking no part on any side; indifference. NEU'TRALIZE, v. *-īz*, to render neutral or inert; to counteract or render imperceptible the properties of a body by causing it to combine with another of different properties. NEU'TRALIZING, imp.: ADJ. counteracting or rendering inert the peculiar properties of a body; reducing to a state of inactivity. NEU'TRALIZED, pp. *īzd*: ADJ. reduced to neutrality. NEU'TRALIZER, n. *-ī-zėr*, that which renders inert the peculiar properties of any body. NEU'TRALIZA'TION, n, *-ĭ-zā'shŭn* [F.—L.]: the act of reducing to a state of neutrality; in *chem.*, the process by which an acid and a base are combined in such proportions as to counteract or render inert the properties of both. NEUTRAL AXIS. imaginary line through any body which is being subjected to a transverse strain; separating the forces of extension from those of compression. If the ratio of the resistances to extension and compression were the same for all substances, and depended merely on the form of the body, then in all bodies of the same form the neutral axis would have a definite geometrical position; but it has been satisfactorily proved, by Eaton Hodgkinson, that this ratio has a separate value for each substance. In wood, where the ratio is one of equality, the neutral axis in a beam supported at both ends, whose section is rectangular, passes lengthwise through the centre of the beam; while in cast-iron, in which the resistance to compression is greater than that to extension, it is a little above, and in wrought iron, in which the contrary is the case, it is a little below, the centre. NEUTRAL TINT or COLOR, a factitious gray pigment used in water-colors, composed of blue, red, and yellow in certain proportions.

NEUTITSCHEIN, *noy'tĭt-shīn*: small manufacturing town of Moravia, on the Titsch, 80 m. n.e. of Brünn. It contains an old castle, and carries on manufactures of cloth and woolen goods, dyeing, and wagon-making. Pop. (1880) 10,274.

NEUTRA, *noy'trâ:* town of Hungary, capital of the county of N., on the river N., 72 m. n.n.w. from Pesth. It is a very old town, having been the residence of a Moravian prince in the 9th c., before the Magyar invasion. Weaving is carried on to some extent, and N. being not far from the Moravian frontier, has considerable transit trade. Pop. (1880) 8,660.

NEUTRALS: nations who, when a war is in process, take no part in the contest, and evince no particular friendship for, or hostility to, any of the belligerents. As a general rule, N. should conduct themselves with perfect impartiality, and do nothing which can be considered as favoring one belligerent more than another.

The duties and obligations of N. at sea have given rise to many complicated questions. It is allowed on all hands that a neutral state forfeits her character of neutrality by furnishing to either belligerent any of the articles that come under the denomination of Contraband of War (q.v.). If she does so, the other belligerent is warranted in intercepting the succors, and confiscating them as lawful prize. Contraband of war, besides warlike stores, has sometimes been held to include various other articles, a supply of which is necessary for the prosecution of the war; and it has been doubted how far, in some circumstances, grain, hay, and coal may not come under that category.

An important question regarding the rights of neutrals is, whether enemies' goods not contraband of war may be lawfully conveyed in neutral bottoms. The principle that free ships make free goods was long resisted by Great Britain and other countries, and the general understanding has been, that belligerents have a right of visiting and searching neutral vessels for the purpose of ascertaining—1st, whether the ship is really neutral, as the hoisting of a neutral flag affords no absolute security that it is so; 2d, whether it has contraband of war or enemies' property on board. Neutral ships have therefore been held bound to provide themselves with passports from their government, and such papers as are necessary to prove the property of the ship and cargo, and it is their duty to heave to when summoned by the cruisers of either belligerent. It has been considered that a neutral ship which seeks to avoid search by crowding sail or by open force, may be captured and confiscated. When a merchant-ship is sailing under convoy of a vessel of war, it has been said that the declaration of the officer in command of the convoy that there is no contraband of war or belligerent property on board, is sufficient to bar exercise of the right of search.

A declaration having important bearings on the rights of N. was adopted by the plenipotentiaries of Great Britain, Austria, France, Prussia, Russia, Sardinia, and Turkey, in congress at Paris, 1856, Apr. 16: see INTERNATIONAL LAW.

It has sometimes been proposed to exempt private property at sea from attack during war—such a project.

however, seems inexpedient. There may be a propriety in respecting the property of individuals on land, in a time of war, because its destruction, however injurious to the persons immediately concerned, can have little influence on the decision of the contest But at sea, private property is destroyed, because those from whom it is taken, being purveyors or carriers for the community at large, its loss must seriously affect the public, and have no small influence in bringing the contest to an end. See BLOCKADE: PRIVATEER.

NEUVAINES, n. plu. *nū-vānz'* [F. *neuvaine*, a period of nine days—from *neuf*, nine]: in the *Rom. Cath. Chh.*, prayers of the same kind offered nine successive days.

NEUWIED, *noy'vēt:* town of Rhenish Prussia, on the right bank of the Rhine, 8 m. below Coblenz; chief town of a circle in the dist. of Coblenz, and cap. of the mediatized countship of Wied. It is the seat of the princes of Wied, with a beautiful castle. N. was founded toward the end of the 18th c. Prince Alexander of Wied-Neuwied, offering perfect toleration in religious matters as an inducement, invited colonists of whatever persuasion to settle here. The town is well built, with wide, straight streets, running at right angles to each other, and contains the churches of Lutherans, Rom. Catholics, Jews, Baptists, Moravian Brethren, etc. The inhabitants are well conditioned and industrious; and the schools are of notable excellence, drawing pupils even from England. The people carry on manufactures of hosiery, woolen and cotton fabrics, iron-wares, leather, and tobacco. Pop. (1890) 11,062; (1895) 10,593.

NEVA, *nā'vâ:* river of Russia, in the govt. of St. Petersburg, flows w. from the s.w. corner of Lake Ladoga to the Bay of Cronstadt, in the Gulf of Finland. Its length, including windings, is about 40 m., 9 m. of which are within the limits of the city of St. Petersburg; and in some places it is 2,100 ft. broad, and about 56 ft. deep; although at Schlüsselburg, where it issues from the lake, and at St. Petersburg, where it enters the sea by several branches, it is shallow. About midway in its course through St. Petersburg it divides into the Great N. (850–1,700 ft. wide), Little N. (945–1,365 ft. wide), and the Great Nevka (280–1,205 ft. wide), this last dividing below and sending off the Little Nevka (370–1,129 ft. wide). The delta is fronted by sand-banks and rocks, and the channels are narrow and not of much depth. From Cronstadt, goods are brought to St. Petersburg in lighters or in small steamers. By the Ladoga canal, the N. communicates with the vast water-system of the Volga, and thus it may be said to join the Baltic with the Caspian Sea. Its current is rapid, and its volume immense. It is covered by drift ice from about Nov. 25 to Apr. 21. An extensive traffic is borne on its waters.

NEVADA, *nė-vâ'dâ :* state; one of the United States; in the Pacific Rocky Mountain region; 23d in order of admission into the Union, and 36th of all the states; the smallest of all in population, but notable for reaching from 1871, for a few years, the first place in production of the precious metals.

Location and Area.—N. lies between lat. 35° and 42° n. and long. 114° and 120° w.; bounded n. by Or. and Ida., e. by Ut. and Ariz., s.w. and w. by Cal.; extreme length from n. to s. 483 m.; greatest breadth from e. to w. 423 m.; 110,700 sq. m. (70,848,000 acres); general elevation above the sea 4,000 ft.. and mountains 1,000 to 8,000 ft. higher; cap. Carson City.

Topography.—N. lies mostly within the s. part of what is known as the Great American Basin, the elevation of which, not less anywhere than 4,000 ft. above the sea, now forms an immense table-land, but was in remote past ages, according to geological indications, the bottom of a sea several hundred thousand sq. m. in extent, shut in by lofty mountains, and traversed over its whole area by n. and s. mountain ranges, which rose out of the primeval sea, and now rise from the valleys and plains of the plateau. For N. the Sierra Nevada forms the w. wall, and the Wahsatch the e., while cross-ranges on the n. and s. shut in the chief area of the state, cutting off all outlet for its waters; and the n. and s. ranges cut the whole interior plateau (4,000 ft. above sea-level) into valleys and plains, bordered everywhere by ranges rising 1,000 to 8,000 ft. (i.e., 5,000 to 12,000 ft. above sea-level). An area of about 12,000 sq. m. lies outside of the mountain-locked general interior of the state, in a second basin, which is that of the Colorado river. The many valleys vary in width from 5 to 20 m., while the base width of the adjacent mountains is commonly about the same. These lie mostly in a n. and s. direction. The Sierra Nevada rises on the w. boundary, with a single spur thrown out to the n.e., the Washoe Mountains. In the w. of the state are the Virginia chain, with Pyramid Lake on the e.; then the Lake range, between Pyramid and Winnemucca lakes; e. of Winnemucca, the Truckee chain; then the Trinity and Antelope mountains, forming the w. boundary of the lower Humboldt river and lake valley; then the W. Humboldt and the E. Humboldt mountains, with a broad valley separating the two chains; and s. of the Humboldts the Toyabe chain and its parallel, the Santa Rosa; then, as outliers of the Toyabe to the w., the Pah-Ute and Coyote ranges, reaching n. toward the Humboldt river and lake; while e. and s.e. of the E. Humboldt range are the Edwards Creek, New Pass, Shoshone and Reese River, Hot Creek, Reveille, Smoky, Diamond, Egan, Ungoweah, and Goshoot mountain chains, with separating valleys. The White Mountains are an isolated range in the s.w. In the W. Humboldt and Toyabe ranges, some of the peaks rise 10,000 or 12,000 ft. above sea-level (6,000 to 8,000 ft. above the valleys). In that part of the state lying in the Colorado valley, numerous ranges rise ab-

124°
A
122°
B
120°
C
118°
D
116°
E
114°
42°
40°
38°
1
2
OREGON
IDAHO
Crescent City
Smith River
Hamburg
Scott Bar
Yreka
Montague
Mt Hebron
Straw
Lake City
Willowranch
Alturas
Cedarville
Eagleville
Likely
Madeline
Termo
Horse Lake
Murray
Amedee
Susanville
Honey L
Milford
Genesee
Long Val
Liegan
Round Hole
Winnemucca
Lovelock
Granite Pt
Brown Jc
Oreana
Rye Patch
Unionville
Humboldt R
Humboldt L
Iron Pt
Stone Ho
Mote
Battle Mtn
Dillon
Bailey's
Watts
Bridgee
Mineral
Canyon
Walters
Ravenswood
Vaughns
Silver Cr
Catons
Austin Jo
Austin
Ruby Hill
Eureka
Diamond
Alpha
Pine
Oak
Summit
Garden
Cold Gr
Cherry Cr
Schellbourne
Warm Spgs
Steptoe
McGill
Ely
Kimberly
Hamilton
Cleveland
Osceola
Taylor
Ward
Wheelers Pk
Aurum
Smithville
Ibapah
Duckwater
Barnes
Burbank
Millett
Mildas
Berlin
Morey
Belmont
Current
Sunnyside
Hotcreek
Manhattan
Tybo
Toiyabe Ra
Toquima Ra
Monitor Ra
Shoshone Ra
Reese R
Humboldt R
Carson R
Carson L
Carson Sink
Pyramid Lake
Pyramid L
Lake Range
Desert Ra
Virginia City
Mt Anna
Dayton
Ft Churchill
Wabuska
Mason
Rio Vista
Schurz
Walker Riv
Ind Res
Gillis
Downeyville
Thorne
Luning
New Boeton
San Antonio
Sodaville
Rhodes
Fletcher
Tonopah Jc
Aurora
Belleville
Belleville Jc
Candelaria
Blair Jo
Blair
McLean
McSweeney Jo
Tonopah
Goldfield Jc
Goldfield
Reveille
Ploche
Sulphur Spgs
Escalante
Reno
Verdi
Sparks
Wadsworth
Clarks
Vista
Derby
Hawes
Hazen
Leetville
Stillwater
Fallon
Churchill
Pershing
Humboldt
Lander
Nye
Esmeralda
Mineral
Lincoln
Clark
Sierra Nev
Wasatch Mts
Snake Mts
Deep Creek Mts
Goose Lake
Lake
Modoc
Siskiyou
Shasta
Lassen
Plumas
Sierra
Nevada
Placer
El Dorado
Alpine
Amador
Calaveras
Tuolumne
Mariposa
Madera
Fresno
Inyo
Mono
Kern
Tulare
Kings
Monterey
San Benito
Santa Clara
Santa Cruz
San Mateo
Alameda
Contra Costa
San Joaquin
Stanislaus
Merced
Sacramento
Solano
Napa
Sonoma
Marin
Mendocino
Lake
Glenn
Colusa
Yolo
Yuba
Sutter
Butte
Tehama
Trinity
Humboldt
Del Norte
Klamath
Modoc
Lassen
Shasta
Siskiyou
Mt Shasta
Mt Johns
Mt Bragg
Mt Konocti
Lassen Pk
Pitt R
Klamath R
Eel R
Trinity R
Sacramento R
Feather R
Yuba R
American R
Cosumnes R
Mokelumne R
Stanislaus R
Tuolumne R
Merced R
San Joaquin R
Owens R
Owens L
Mono L
Tulare L
Buena Vista L
Honey L
Eagle L
Horse L
Middle Lake
Lower L
Copper L
Clear L
Rhett L
Tule Lake
Lower Klamath L
Goose Lake
Guano L
Pyramid L
Walker L
Tahoe L
Clear L
Kelseyville
Lakeport
Upper Lake
Lower Lake
Clear L
Middletown
Calistoga
Santa Rosa
Petaluma
Sebastopol
Healdsburg
Cloverdale
Ukiah
Willits
Laytonville
Westport
Fort Bragg
Mendocino
Little River
Albion
Potter Val
Calpella
Covelo
Hopland
Manchester
Wendlin
Arcata
Eureka
Samoa
Humboldt B
Ferndale
Fortuna
Rohnerville
Alton Jc
Carlotta
Scotia
Petrolia
Shively
Upper Mattole
Blocksburg
Bridgeville
Garberville
Phillipsville
Harrle
Balley Mt
Tehama
Red Bluff
Corning
Paskenta
Kirkwood
Orland
Willows
Norman
Colusa
Williams
Arbuckle
Dunnigan
Woodland
Davis
Winters
Vacaville
Fairfield
Suisun
Vallejo
Benicia
Martinez
Pittsburg
Antioch
Oakley
Brentwood
Byron
Tracy
Lathrop
Stockton
Lodi
Galt
Elk Grove
Sacramento
Folsom
Roseville
Rocklin
Auburn
Colfax
Grass Valley
Nevada City
Marysville
Yuba City
Oroville
Chico
Paradise
Gridley
Biggs
Willows
Orland
Red Bluff
Tehama
Corning
Vina
Los Molinos
Cottonwood
Anderson
Redding
Shasta
Ono
Igo
Gas Pt
Hooker
Keswick
Middle Cr
Iron Mtn
Douglas Cy
Big Bar
Burnt Ranch
Weaverville
Trinity Cen
Hayfork
Hyampom
Forest Glen
Platina
Ruth
Mad R
Eel R
Van Duzen R
Yager
Korbel
Blue Lake
Orleans
Somes Bar
Forks of Salmon
Sawyers Bar
Etna Mills
Fort Jones
Yreka
Hornbrook
Seiad Val
Thrall
Bogus
Klamath R
Lower Klamath L
Tule Lake
Langells Val
Olene
Midland
Bonanza
Lakeview
Warner Lake
New Pine Cr
Willowranch
Darle Cr
Lake City

CALIFORNIA
AND
NEVADA
SCALE OF MILES
0 10 20 30 40 50 60 70 80 90 100
Longitude 120° West from Greenwich
124° 122° 118° 116° 114°
36° 34°
Los Angeles
San Diego
San Bernardino
Pasadena
Santa Barbara
Fresno
Las Vegas
Grand Canyon
Colorado River
Salton Sea
Tulare L
Mt. Pinos
Sierra Madre
Santa Barbara Chan.
Gulf of Santa Catalina
SANTA BARBARA ISLANDS
SAN MIGUEL
SANTA ROSA
SANTA CRUZ
SANTA BARBARA
SANTA CATALINA
SAN NICHOLAS
SAN CLEMENTE
MOHAVE DESERT
COLORADO DESERT
DEATH VALLEY
SEQUOIA NAT. PARK
PACIFIC OCEAN
ARIZONA

ruptly from the general table-land level. The chief are the Muddy, Vegas, Spring, and Kingston. Three peaks of considerable height are Tem Piute, Pahranegat, and Picohe. On the e. slope of the Sierra Nevada, and in the Humboldt and Toyabe ranges, occur numerous streams which, after flowing some distance, disappear from the surface, and farther on reappear as lakes. The drainage of the numerous basins formed by the valleys is commonly of this character, the streams having no outlet but the lakes in which they end, or the marsh in which they are lost. None of the Nevada streams send their waters to the sea, except the Colorado, on the s.e. boundary, which flows to the Gulf of California, with the Rio Virgin and other small streams flowing into it, and in the n. the Owyhee and other streams which pass into Snake river, and thence by the Columbia to the Pacific. The chief rivers are the Humboldt, nearly 300 m. long, formed by the meeting of several streams in the n.e. of the state, and flowing s.w., with a current usually fordable, into Humboldt lake or sink; the Truckee, rising in Tahoe and Donner lakes, in the Sierra Nevada, and flowing n.e. and n.w. 125 m., into Pyramid and Winnemucca lakes; Walker river, in the s.w., which takes a circuitous course 100 m. from the Sierra, to Walker Lake; Carson river, also rising in the Sierra, and flowing 180 m., into the Carson sink or lake; Reese, in the n.w., rising in the Toyabe range, and after a course of 150 m. in the central part of the state, with an average width of 10 or 15 ft. and depth not over two ft., disappearing in the sand; Quinn, in the n.w., flowing 80 m. and similarly disappearing; the Rio Virgin, in the s.e., flowing into the Colorado, which is for some distance the boundary on the s.e.; and the Amargosa (bitter), in the s. part, flowing 150 m., with several disappearances below the surface, and finally lost in the sands of Death valley, over the boundary, in Cal. Many of the valleys have no streams, and therefore very little arable land. The more extended plains between the mountains are marked by extreme sterility, destitute for the most part of wood, and only scantily supplied with grass. In proportion as the valleys or mountain slopes have streams of some size, much of the land is arable, and among these valleys and slopes are some of the best grazing lands of the Pacific coast region. The lakes which are the principal reservoirs of the water of N. are: Pyramid, 33 m. long, 14 m. wide; Walker, about the same size; Carson, 12 m. in diameter; Humboldt, not quite as large; Winnemucca, 18 m. long, 8 m. wide; Tahoe, 1,500 ft. deep, 6,000 ft. above the sea, only one-third of it in N.; and a great number of shallow lakes of considerable extent, which disappear in the dry season, and some of which are known only as mud-lakes. Many are, in fact, mere shallow sinks, as Carson and Humboldt. Whole plains and valleys, whose clayey soil is impervious to water, are converted in the wet season into lakes a foot or two in depth, called 'mud-lakes.' from their miry and impass-

able condition. Few of them continue wet through the year, and when dry their bottoms constitute what are known as 'alkaline flats'—their beds being covered with an incrustation of alkaline matter. The most extensive mud-lakes are found in the n.w., the central, and the s. parts of the state. Very many springs, cold and hot, are found—some quiet, others boiling forth; some of pure and clear water, others strongly mineral or saline; some occurring in groups, others singly. They are found from 1 to 100 ft. across and 3 or 4 to 150 ft. deep, and are usually circular in form. They vary in temperature from 50° Fahr. to the boiling-point, here about 204°. The mineral and warm springs have in most cases formed mounds about them, from the limestone or siliceous matter in the water, at times 50 or 60 ft. high and covering several acres. The waters usually contain soda in various forms, chlorides of sodium and magnesium, lime, sulphur, silica, and iron. The Steamboat springs of Washoe co., 4 m. e. of the Sierra Nevada, 16 m. n. of Carson City, have created a mound about ¼ m. wide and ½ m. long, out of the irregular fissures in which, 6 to 12 inches wide, volumes of hot water, or jets of steam and gas, pour forth every few minutes, with a sound like that of a boiling caldron, which the early discoverers likened to the puffing of a steam-boat. There are small pools also in the rock, which rise and fall every six minutes. The waters vary in heat up to the boiling-point. There are equally large and remarkable cold springs, especially in the central and e. parts of the state. Very extensive salt-deposits are found in N., and borax is very abundant. Salt valley, 30 m. e. of Humboldt Lake, has an immense salt-bed, and in Lincoln co., in the s.e. part of the state, w. of the Rio Virgin, are salt-bluffs of pure rock-salt, under a cover of soil, 2 m. long, 1½ m. wide, rising 500 ft. above the valley, and of unknown depth. The most extensive salt-field of the state is in the Silver Peak district of Esmeralda co., covering 40 or 50 sq. m., where a crystallized mass of salt of unknown thickness underlies seams of clay the upper surface of which has a thick incrustation of pure salt. In Churchill co., e. of the Carson lake or sink, the Sand springs salt-marsh has, in the same way, a bed of crystallized salt of unknown thickness underlying several layers of clay, whose marshy surface is covered in some places with a few inches of water and coated with an incrustation of salt two or three inches thick, which will re-form after removal, and may be gathered about once a month. About 40 m. n. of this marsh occurs a similar deposit. There are salt-marshes also in Smoky valley, Nye co., 32 m. from Austin, and in Eureka co., 43 m. n. of Eureka; also the Eagle salt-marsh in Churchill co., three m. from Hot Springs, on the Central Pacific. In the first the salt forms the usual crust in the spring; in the second and third the salt is got by evaporation of the water. Borax is got abundantly near Hot Springs and e. of the Carson lake, from the boracic acid and borates of lime and soda

of the alkali flats. Near Columbus, in Esmeralda co., are the richest and most extensive deposits of the salts of borax, containing 31 per cent. The borates of lime and soda lie between two layers of salt, and under the lower of the salt-seams is a bed of sulphate of soda or Glauber's salt. In the central part of the state, on the shores of a small lake, 25 m. from Wadsworth, on the Central Pacific, soda forms in a nearly pure state, and will reform when removed.

Climate.—The far s.w. situation of N., its general elevation, and its relation to the mountains which surround or occupy it, produce a climate characterized by great extremes, but remarkably healthful and invigorating, the sunshine being bright, and the air dry and pure. The winds are strong, and the change from day to night often gives intense cold. The mid-winter fall of the mercury is to 10° or 15° below zero in the valleys, and much lower in the mountains. Spring opens before Mar. 1, but for two months longer there may be chilling rain and snow, sharp frosts, and piercing winds, due to the nearness of the mountains. Through April and May, and to the beginning of the dry season in June, severe thunder-storms occur; and though the general rainfall from Jan. to May—the wet season—is not large, there occur at times local cloud-bursts, suddenly precipitating large amounts of water and doing much damage; while, in the absence of clouds, sand-storms, and sand-pillars formed in the same way as water-spouts at sea, are common on the plains. The dry season lasts until Oct.; and through July and Aug., though the temperature may rise to 100° or 105°, it does not average for midday heat more than 90°, and it regularly falls at night to between 80° and 70°. The e. part of the state has more oppressive heat, and summer thunder-storms until the middle of Sep. In the s.e. part there is much less intense cold and very little winter frost and snow. Most of the lands of this part are a sandy desert, yielding only cacti, sage-brush, and grease-wood. The same character belongs to the region stretching from Great Salt valley, and the vicinity of the Humboldt and Carson sinks, through the centre of the state, and extending thence over the sandy wastes that reach to Death valley, in Cal. In parts of the state the natural condition of valleys, plains, and mountains alike is the absence of wood and scantiness of grass, from the lack of water. The plains generally produce only the sand-grass and sage, which prove, however, of unexpected value for grazing, the former growing in bunches to a foot high, with abundance of very nutritious seeds, and the latter having a good relish and fattening quality for cattle after the frost has ripened it. Most of the mountain ranges are more or less clothed with the bunch grass, which makes both summer and winter fodder of excellent quality. The watered valleys have fine meadow-land, and along the streams are cotton-woods, copses of willows, wild cherry, birch, wild vines, gooseberry, currant, rose, and other bushes. Forests,

never numerous, have in many cases been swept away. The e. slopes of the Sierra Nevada alone formed a lumber region, heavily timbered with pine, spruce, and fir. The White Pine Mountains, in the e. part of the state, had a fair growth of white pine and white fir, and yellow pine occurred in the Colorado basin, on the e. slope of the Spring Mountains. Over many of the interior ranges is a considerable growth of cedar, juniper, mountain mahogany, fir, and the nut-pine. The last of these supplies firewood and fencing very extensively, and its cones contain a nut, about half an inch long by a quarter of an inch in diameter, palatable and nutritious for either man or beast: to the Indians especially it has served almost as their staff of life.

Geology and Minerals.—Not only the wealth of precious metals, but also the variety and complexity of geological phenomena, give peculiar interest to the study of rock and soil throughout all Nevada. The vast sea anciently overspreading all the basin-lands has occasioned, on the valleys and plains, recent deposits of great depth, out of which the rocky ranges rise, composed of representative rocks of all the geological periods, with many signs everywhere of the former volcanic character of the whole region. A considerable area in the n.w. is an extension of the great lava-field of southern Oregon. All the interior ranges of mountains contain veins producing gold, silver, copper, lead, and antimony of value for mining; and there are found also iron, platinum, zinc, nickel, cobalt, quicksilver, lignite, gypsum, kaolin, and beds of pure sulphur, besides the vast deposits of salt, soda, etc., above mentioned. The iron, which occurs in numerous forms, has not yet been mined to any extent. Deposits of mica have been found which promise valuable development. The mining has hardly touched the rich mines of copper, has only begun with the unlimited supply of salt, and has been extensive, and in some respects exhaustive, with only gold and silver. From 1871, for a time, the value of the bullion product of Nevada exceeded that of California. It rose from gold $600,000 and silver $1,400,000 (1861) to gold $10,000,000 (1873), the same (1874), and silver $25,250,000 (1873) and $25,500,000 (1874). The entire product of the 14 years was: gold $63,230,000, and silver $181,350,000—a total output of $244,580,000. Of this aggregate the famous Comstock lode gave $169,000,000. 1878, a decline began, gross products of the two Comstock lode mines, the California and the Consolidated Virginia, dropping from $32,648,869 (1877) to a figure which within a year or two precluded dividends for several years. Till 1878 these two mines, worked on a spot about 800 ft. long by 60 to 300 ft. wide, had yielded $100,000,000 gross output, and had paid in dividends $69,140,000, to which, before dividends failed, enough was added to make $74,250,000. The 'find' of this richest of bonanzas was not made until $438,490

had been spent without any return, in the work of eight years. On the same lode with the two bonanza mines, 20 other mines were located, which paid dividends till 1876 (when they stopped paying for a time) of $47,223,000. The annual estimated coining value of the gold production is $4,307,800; silver, $3,484,600; the copper production is over 750,000 pounds, and the lead production over 4,000 short tons. The building stones include limestone, granite, slate, sandstone, agate, and marble.

Zoology.—Among the animals native to Nevada are the grizzly and Mexican bears, cougar, wild cat, lynx, Rocky Mountain sheep, antelope, deer, sage-hare, sage-grouse, and other smaller game. Coyotes, badgers, and rabbits are very common. Trout, salmon-trout, and other fish abound in the larger lakes, as Tahoe; and the waters of the mountain streams, and of others in which the water is pure, are well stocked with fish.

Agriculture.—Farming has always taken second place to mining in N. The state is one of the most arid in the country, but, with the aid of irrigation, it shows every evidence of becoming one of the most fertile. Irrigation is rapidly doing so much to build up the agricultural industry that figures of any sort are of practically no value, so transitory are they. The principal crops are wheat, barley, oats, hay, potatoes, and other vegetables, while cotton, sorghum, tobacco, melons, squashes, beans, and smaller grains, as well as oranges, lemons, apples, peaches, pears, apricots, grapes, figs, olives, and pomegranates can also be raised. Stock raising is a very important and profitable industry, since the grazing land is extensive and of excellent quality.

Manufactures.—There are over 150 manufacturing establishments, whose aggregate annual product is valued at about $4,000,000. The largest industries are cars and general shop construction; flour and grist-mill products, butter, and liquors.

Railroads.—In 1875 there were 527 miles of track in the state, of which 454 were part of the Central Pacific road where it crosses the state. Rates for both passengers and freight were considered exorbitant until in 1878, under a decision of the United States Supreme Court, the state found that it could reasonably control these and accordingly passed an act in 1879 regulating the railroad rates. In 1880 the Nevada Central Railroad was completed and put into operation. From that time forward the railroad systems have been gradually, but none the less steadily, extended.

Finance and Banking.—The total assessed valuation of all property in the state, including both personal and realty property, is about $75,000,000; the tax rate varies in each county, running all the way from $1.20 per $1,000 to $3.10 per $1,000. The bonded debt of the state is $550,000. There are about 10 national banks,

about the same number of State banks, and less than 5 private banks.

Education.—N. spends in the vicinity of $500,000 a year in the maintenance of its public schools, in which there are about 10,000 pupils enrolled, with about 500 teachers. The state constitution requires the legislature to provide for a system of common schools, and a S. University with departments of agriculture, mechanical arts, mining, as well as other academic departments. A common school must be maintained in every school district, and it must keep its doors open for at least six months in every year. It is further provided that all children between the ages of eight and fourteen years, inclusive, must attend school during at least sixteen weeks in the course of every year, and of these sixteen weeks of attendance at least eight weeks must be consecutive. The public high schools include institutions at Austin, Carson City, Eureka, Gold Hill, Reno, Dayton, Wadsworth, Winnemucca, and Virginia City. The national government also maintains a school for the education of Indian children within the confines of Nevada. The S. University was established by an act of 1873, and was formally opened to pupils during the following year, although at that time it consisted only of a preparatory department. The institution was at that time located at Elko, and this town continued to be the seat of the S. University for a period extending over twelve years. At the expiration of that time, during the academic year 1886-1887, it removed to Reno. When this second start was made the university took possession of a much better equipped building than it had formerly had the advantage of, the new edifice being worth $20,000. The university then had a president, two professors, and enjoyed a state annual appropriation of $22,600. Arrangements were then made for preparatory, normal school, and university courses. In 1888 an agricultural college and a college of mines were added.

Charities and Corrections.—By an act of 1881 appropriating $80,000, an insane asylum was ordered built at Reno, and, on its completion, at a cost of $63,000, the insane were removed to it, in 1882, they being 148 in number. By an act of 1887, the governor, the treasurer and comptroller were made a board of commissioners to care for the indigent insane. The care of orphans and dependent children has been in part arranged through other asylums, but largely by the state asylum at Carson City.

History.—Nevada was originally a part of California, known as 'the Washoe Country,' until it was organized as a territory in 1861. It was first visited by the white man in 1775, when Francisco Garcés, a Franciscan friar, stopped here on his way to California. In 1825, Peter Ogden, of the Hudson Bay Company, visited the Humboldt river, which for a time was called the Ogden. In 1826, Jedediah S. Smith crossed the state from west to

east. Frémont passed through the state in 1843-4-5, and occasional immigrants to Oregon or California settled here. In 1849, the Mormons founded a trading post on the Carson river, near Genoa. A part of the state was included in Utah Territory, when it was organized in 1850, but in 1853 the settlers in the Carson valley petitioned to be annexed to California, claiming that Utah did not protect them. A petition for territorial government was sent to congress in 1857, and in 1858 a provisional government was formed at Carson City with Isaac Roop as governor. In 1860, another petition was sent to congress and the territorial delegate applied for admission. The Comstock lode was discovered in 1859, and miners flocked into the district from the east and north and from California. At the outbreak of the civil war the scanty population sent loyal troops to the front and Nevada citizens donated $50,000 in silver bricks to the sanitary commission. In 1863, Sep., an election was held for delegates to form a state constitution, but the proposition was defeated in 1864, Jan. The political situation made two additional republican votes in the United States senate exceedingly desirable, and congress, in 1864, Mar., again passed an enabling act; in July the constitution was accepted, and the state was admitted 1864, Oct. 31. The great Sutro tunnel, designed for drainage and access to the mines of the Comstock lode, was constructed in 1879. The silver product of the state from 1859 to 1869 amounted to $137,382,000, and this had much to do with gaining Nevada a place in the Union. The decline of the mining industry of the state, and failure to develop in other directions, has caused the diminution of population. The recent development of the gold mines of the state, however, has caused a large and steady influx of miners and speculators, and several modern, well-built and prosperous towns, such as Tonopah, Goldfield (in 1907, made the county-seat of Esmeralda county), Rhyolite, and Manhattan, have sprung into existence since 1900 and are rapidly increasing both in size and importance. The state still has, however, the fewest inhabitants of any of the states of the Union. The capital city is Carson; other large cities and towns are Reno, Virginia City, Elko, Eureka, Austin, Wadsworth, Delamar, Winnemucca, and those mentioned above.

Government.—The state administration consists of a governor, lieutenant governor, secretary of state, treasurer, comptroller, superintendent of public instruction, attorney-general, surveyor-general, and state printer, elected for four years. The legislature was at first composed of 25 senators and 50 members of a lower house: the numbers were reduced by an act of 1881 to 20 and 40. The judiciary consists of a chief and two associate justices of the supreme court, elected by popular vote, one every two years, to serve for six years; of nine district judges for the nine districts into which the state is

divided, elected to serve for four years; and of justices of the peace, elected by the cities and towns for two years. The successive governors, with their terms of service, have been: *Territory*—James W. Nye, 1861-64. *State*—Henry G. Blaisdell, 1865-70; Louis R. Bradley, 1871-78; John H. Kinkead, 1879-82; Jewett W. Adams, 1883-86; C. C. Stevenson, 1887-90; R. K. Colcord 1891-95; John E. Jones, 1895-97; R. Sadler, 1897-1903; J. Sparks, 1903-10; T. L. Oddie, 1910—.

Politics.—General elections, state, congressional, and presidential, occur in even years on the Tuesday next after the first Monday in Nov. The state has two U. S. senators, and one representative in the lower house, and is thus entitled to three electoral votes. By the state constitution, any proposed amendments must be passed by two successive legislatures and ratified by the people; or a convention for entire revision may be held upon the vote of two-thirds of each house of the legislature, ratified by the people. Fourteen amendments to the constitution were submitted to the people 1889, Feb. 11, at a special election, and six were adopted. One permitting lotteries to be held was defeated. In 1897, Feb., a law was enacted licensing 'any contest or exhibition with gloves for a wager or reward,' the gloves not to weigh less than 4 oz., the license-fee to be $1,000; under its provisions a prize-fight took place between James J. Corbett and Robert Fitzsimmons, at Carson City, Mar. 17. The right to vote in Nevada is accorded to every male citizen 21 years of age, who is neither insane, nor an idiot, nor an unpardonable felon. The three electoral votes of Nevada have been cast as follows: 1864, Abraham Lincoln and Andrew Johnson; 1868, U. S. Grant and Schuyler Colfax; 1872, U. S. Grant and Henry Wilson; 1876, Rutherford B. Hayes and William A. Wheeler; 1880, Winfield S. Hancock and William H. English; 1884, James G. Blaine and John A. Logan; 1888, Benjamin Harrison and Levi P. Morton; 1892, James B. Weaver and James G. Field; 1896, William Jennings Bryan and Arthur Sewall; 1900, William Jennings Bryan and Adlai E. Stevenson; 1904, Theodore Roosevelt and Charles W. Fairbanks.

Population.—(1870) 42,491; (1880) 62,266; (1890) 45,761; (1900) 42,335; (1910) 81,875.

NEVADA: Iowa, city, county-seat of Story county; on a branch of the Chicago & North-Western railroad; about 30 miles north by east of Des Moines. It is in an agricultural region in which stock-raising is a prominent industry. Its chief manufactures are flour, brick tile, lumber, and dairy products. It has a large cold-storage plant, and considerable trade in dairy products, poultry, eggs, grain, flour, and live-stock. The public library contains about 5,500 volumes. Pop. (1900) 2,472.

NEVADA: Mo., city, county-seat of Vernon county;

on the Missouri, K. & T., and the Missouri P. railroads; about 130 miles southwest of Jefferson City and 100 miles south of Kansas City. It was settled about 1830 by a colony from the eastern part of the state, incorporated in 1865 or 1866, and chartered as a city in 1883. It is an agricultural and stock-raising region, and in the vicinity of the zinc mines. Its manufactures are chiefly local. The number of men employed in railroad shops and manufacturing establishments is about 1,000. The city has considerable trade in agricultural products and live-stock, and it is a distributing centre for a large part of Vernon county. Its educational institutions are public schools, Cottey College for Young Women, opened in 1884 under the auspices of the Methodist Episcopal (South) Church, and Saint Francis Academy (R. C.). It has an orphan asylum, the State Lunatic Asylum, and Artesian Lake Park. The three banks have a combined capital of $250,000. The government is vested in a mayor and a council of 10 members, who hold office two years; five councilmen are elected each year. Pop. (1900) 7,461; (1910) 7,176.

NEVADA STATE UNIVERSITY: first founded at Elko in 1873, then removed to Reno and opened in 1886. It is a part of the public educational system of Nevada and the only school of collegiate grade in the state. Besides the regular collegiate courses in the classics, literature and general science, there are courses in agriculture, civil, mechanical, and mining engineering, and domestic science; also a business course; a normal and a preparatory department. In the agricultural department short winter courses are offered in agriculture, dairying and domestic science. In 1901 a branch school of mines was established at Virginia City under the head of university extension. The State Experiment Station is also connected with the university. The degrees conferred are A.B. and B.S., with the corresponding masters' degrees for graduate work. Women are admitted and constitute fully half the number of students; military drill for the men is a part of the curriculum. As the agricultural department is connected with the university, it receives the income from the federal land grants for agricultural colleges. The students number about 300, and the faculty 30.

NEVE, n. *nā'vā* [F. *névé*—from L. *nix* or *nivem*, snow]: the compressed snow or slush of Alpine heights before ultimately condensed into the true ice of the glacier.

NEVER, ad. *nĕv'ėr* [AS. *næfre*, never—from *ne*, not; *æfre*, ever: comp. Gael. *nior*, never]: not ever; at no time, in no degree, as, 'and yet be *never* the worse'; not at all; not, as, 'he answered him to *never* a word'; however, as, 'charm he *never* so wisely; in *Scrip.*, to any or a great extent, as, 'ask me *never* so much dowry.' NEV'ERMORE, ad. *-mōr*, not any more.

NEVERS, *nĕh-vār'*: town of France, capital of the department of Nièvre, and formerly capital of the province of Nivernais. It is on a hill in the midst of fertile plains, at the confluence of the Loire and the Nièvre, 140 m. s.s.e. of Paris. Highly picturesque from a distance, its interior shows steep, winding, and badly paved streets. It contains a beautiful cathedral of the 10th c., and a fine public garden; also a large cavalry barrack, a fine bridge of 20 arches over the Loire, and the triumphal arch erected 1746 to commemorate the battle of Fontenoy. Nevers is the see of a bishop, contains a public library, and has numerous educational, scientific, and benevolent institutions, and an arsenal. There is an important cannon-foundry. Principal manufactures are porcelain and earthenware, glass, brandy, iron cables and chains, and anvils. Pop. 27,673.

Nevers, the *Noviodunum* of the Romans, existed prior to the invasion of Gaul by Julius Cæsar. It has been the seat of a bishop since the beginning of the 6th c., when it was called Nevirnum, became a county in the 10th c., and was erected into a duchy by Francis I. 1538.

NEV'ERSINK HIGH'LANDS. See NAVESINK HIGHLANDS.

NEVERTHELESS, ad. *nĕv'ĕr-thĕ-lĕs'* [*never, the,* and *less*]: not the less; notwithstanding.

NEVIANSK, *nĕv-yânsk'*, or NEVIANSKIY: town of Russia, government of Perm, 50 m. n. of Ekaterinburg; on the eastern or Siberian side of the Ural mountains, and stands on the Neiva, the waters of which flow by the Tobol and the Irtish to the Obi. The district around Neviansk is famous for mineral wealth, particularly for productiveness of gold, copper, and platinum. Neviansk has a mint, the tower of which leans even more than the tower of Pisa. Pop. 18,000.

NE'VILLE'S CROSS. See BRUCE, DAVID.

NEVIN, *nĕv'ĭn*, JOHN WILLIAMSON, D.D., LL.D.: 1803, Feb. 20—1886, June 6; b. Franklin co., Pa. He received his education preparatory to college from his father, and 1817 entered Union College, New York, from which he graduated with honor 1821. After two years spent in regaining his impaired health, he entered, 1823, Princeton Theological Seminary. 1826-8 he acted as Dr. Hodge's substitute as professor of Hebrew; was licensed to preach 1828; in 1829 he was professor in Western (Presbyterian) Theological Seminary, at Allegheny City, Pa. Here he edited, 1833-5, *The Friend,* a weekly journal, in which he strongly urged the then unpopular causes of temperance and abolition. In 1835 he married a daughter of the Hon. Robt. Jenkins, of Lancaster co. Becoming dissatisfied with the ecclesiastical policy of the Presbyterian Church, he, 1840, May, became professor in the German Reformed Theological Seminary at Mercersburg, Pa., and 1841 assumed its presidency and that of Mar-

shall College, retaining the former till 1851, and the latter till 1853, when the college was removed to Lancaster and consolidated with Franklin College. In 1858 he removed to Lancaster, and 1861 was again a professor in Franklin and Marshall College, till 1866, when he became its president, which position he filled until 1876. He was the originator and able exponent of the 'Mercersburg Theology,' the beginnings of which date back to 1843 (see MERCERSBURG THEOLOGY). Among his published works are *Biblical Antiquities* (2 vols. 1828); *The Anxious Bench* (1843); *The Mystical Presence* (1846); *Antichrist, or the Spirit of Sect and Schism* (1848).

NEVIN, ROBERT JENKINS: American Episcopal clergyman; b. Allegheny, Pa., 1839, Nov. 24; d. Mexico City, Mexico, 1906, Sept. 20. He was graduated from Franklin and Marshall College, Lancaster, Pa., in 1859; served through the Civil War in the Union army, becoming brevet-major. He was ordained in 1867, and from 1869 was rector of St. Paul's American Church in Rome, which he built in 1870-6. He wrote *St. Paul's Within the Walls* (1878); *Reunion Conference at Bonn* (1875); etc.

NEV'INS, WINFIELD SCOTT: American journalist; b. Brunswick, Maine, 1850, Dec. 6. He has been connected with the Boston *Herald* for 30 years and was president for 4 years of the school board of Salem, Mass. He has published *Old Naumkeag* (with Webber) (1878); *Guide to North Shore of Massachusetts* (annually, 1880-96); *The Intervale, New Hampshire* (1887); *Witchcraft in Salem Village* (1892).

NEVIS, *nĕv'ĭs:* small island of the West Indies, belonging to Great Britain; one of the group of the Lesser Antilles; immediately s.e. of St. Christopher, from which it is separated by a strait called the *Narrows,* 2 m. wide. It is circular in form; rises in a central peak to about 3,200 ft.; area 50 sq.m. It was discovered by Columbus 1498; colonized by the English 1628. Charlestown, a seaport, with a tolerable roadstead, on the s.w. shore of the island, is the seat of government. The arable lands, comprising 6,000 acres, are well cultivated. The soil is fertile, and the principal products are sugar, molasses, and rum. Nevis, formerly a slave-mart, was temporarily damaged by emancipation, and is now beginning to recover. Nevis is joined with St. Christopher under one legislative council, meeting at St. Kitt's. Pop. 15,500.

NEW, a. *nū* [Bret. *nevez;* Goth, *niujis;* Gael, *muadh;* Skr. *nawa;* L. *novus;* Gr. *nĕŏs,* new]: lately made, invented, or produced; fresh; not old; not before known; modern; of the present time; opposed to *old;* different from the former, as a *new* life; not of ancient family. NEW'ISH, a. *-ĭsh,* somewhat new; nearly new. NEW'ER, compar. *-ẽr.* NEW'EST, superl. *-ĕst.* NEWLY, ad. *nū'lĭ,* lately; recently; in a manner different from the former.

NEWNESS, n. *nū'nĕs,* state or quality of being new; recentness; difference from the former manner; want of practice; in *OE.,* innovation; late change. NEW-LAID, a. fresh, as eggs. NEW RED SANDSTONE, the sandstone lying above the Trias (see below). NEW STYLE, the Gregorian or present method of reckoning time (see CALENDAR). NEW TESTAMENT, the second great division of the Bible (see BIBLE). NEW YEAR'S DAY, first day of the year; January 1 (see below). NEW YEAR'S GIFT, a present given on or about the first day of the year. NEW-COMER, one lately arrived. NEW-FANGLED, a. *OE., newefangel*—from *newe,* new; *fangel,* ready to seize]: new; novel. NEW WORLD, a name applied to North and South America. SYN. of 'new': recent; novel; strange; renovated; commencing; unaccustomed; unfamiliar.

NEW, JOHN CHALFANT: American financier; b. Vernon, Ind., 1831, July 6. He was graduated from Bethany College, Va., in 1851 and studied law, becoming clerk of Marion County in 1856. In the Civil War he served as quartermaster of Indiana until elected to the State senate in 1862. He was cashier of the First National bank of Indianapolis in 1865 and later became its president. He was United States treasurer in 1875-6 and served as assistant treasurer in 1882-4. He was appointed consul-general at London in 1889 by President Harrison and was proprietor of the Indianapolis *Journal.*

NEW ACADEMY: the common title for the form of modified Platonism taught by Philo of Larissa (flourished about 100 B.C.) and Antiochus. They advocate an eclectic dogmatism quite unlike original Platonism.

NEW AL'BANY: city, capital of Floyd co., Ind. It is on the northern bank of the Ohio river, 4 m. below Louisville, 115 m. s.e. of Indianapolis, and on the lines of the Baltimore O. & S., the Pittsburg, C. C. & St. L., the Louisville, E. & St. L., and the Louisville, N. A. & C. railroads. It is 2 m. below the falls in the Ohio river and has extensive water power. Its chief manufacturing industries are large glass works, pork-packing establishments, tanneries, engine and boiler works, furniture factories, flour mills, rolling mills, lumber and planing mills, and foundries. It has a large trade in its manufactures, the farm products of Floyd co., and in building material. Some of its prominent buildings are the government building, the city hall, court-house, fair-ground buildings, the churches, and the schools. It is the seat of De Pauw College for women, St. Mary's Academy (Roman Catholic), Holy Trinity Academy (Roman Catholic); it has public and parish schools and a free public library. Outside the city limits is a National cemetery in which are 2,908 graves, 676 of unknown dead. It was laid out as a city in 1813 and was incorporated in 1839. The government is administered under the charter of 1839 by a mayor and a council. Pop. (1910) 20,629.

NEWARK.

NEWARK, *nū'ėrk:* city, cap. of Essex co., N. J.; on the Passaic river, and the Pennsylvania, the Delaware, Lackawanna and Western, the New York and Lake Erie, the Central Railroad of N. J., the Lehigh Valley, and the N. J. Midland railroads; 9 m. w. of New York. It was settled 1666, May, by 30 families who left Milford and New Haven, Conn., under the leadership of Capt. Robert Treat, and were joined by a colony of like size from Guilford and Branford, Conn., under the Rev. Abraham Pierson, the following year. The place was laid out by these settlers, who allotted three large plots of grounds for public purposes (now Washington, Military, and Lincoln parks), and named the settlement 'ye town on ye Passaick.' The location of the town gave it considerable military importance during the revolutionary war, and at different times it was occupied by the American and by the British troops, and subject to frequent tory raids. The town grew rapidly in population and prosperity after the close of the revolutionary war; became noted for the abundance of elm-trees, the extent and variety of its manufactures, the number of its churches, and the number and influence of its banking and insurance institutions; and was incorporated 1836. In 1900 the city had 3,339 manufacturing establishments, with an invested capital of $103,191,403; the number of mechanics, members of firms, and clerks, 57,694; the amount paid annually to salaried officials, clerks, and mechanics, $29,534,311. The annual cost of material used was $67,105,944, and the value of the annual products was $126,954,049. The chief industry of Newark is that of leather, over 50 firms being engaged in this branch, employing over $5,000,000 capital, producing $12,000,000 annually. Brewing ranks second, with 20 firms, employing $6,000,000 capital, and about $9,000,000 product; jewelry third, with 112 establishments, capital $4,500,000, product $6,000,000; machinery fourth, 75 establishments, capital $4,000,000, product $4,500,000. Other industries employing upwards of a million capital and producing goods to the value of from one to three million dollars annually are: Boots and shoes, clothing, hats, hardware, trunks and valises, watch cases, corsets, smelting and refining, harness, varnishes and celluloid.

N. is laid out regularly, with straight and generally broad streets crossing each other at right angles, those on the n.w. and s. connecting with notably fine boulevards extending up the Passaic river (n.) to the Orange Mountains, Llewellyn and Rutherford parks, Bloomfield, Montclair, and Caldwell (w.), and to Elizabeth (s.). The principal thoroughfares are macadamized or paved with Telford granite, round stones, or asphalt; are lighted chiefly by electricity, and have good sewer and surface drainage into the Passaic river, and, by artificial canals, into Newark Bay. The river is crossed, within the limits of the city, by 10 bridges, nearly all built to accommodate the railroads. There are over

38,800 buildings in the city. The principal public buildings are the government building, the county courthouse (cost $1,750,000), the city hall ($1,500,000), the free public library ($350,000), the Prudential ($3,000,000), the Mutual Benefit ($2,000,000), and the churches and the schools. Several of the banks, insurance companies and business corporations have fine buildings. There are 225 miles of broad streets, 115 miles of which are paved. There are 155 miles of sewers, 87 miles of which are drain-tile and 68 of brick. The streets are lighted by a private corporation. The water plant, owned by the city, furnishes, by gravity, a supply of 50,000,000 gallons per day. There are 275 miles of mains. The original cost of the water plant was $10,000,000. There are 16 public parks, chief of which are Military (the old training ground), East Side, West Side, Branch Brook, Weequahic, Lincoln, and Washington.

There are 16 banks; seven national, four trust companies, and five savings banks. The total deposits aggregate $50,000,000 and the total assets $85,000,000. There are 77 building and loan associations, the assets of which are $10,805,000. There are four fire insurance companies, assets of which are $8,640,000; two life insurance companies, assets of which are $127,000,000. The taxable valuation is $163,303,000; the tax rate, 2.1 on a two-thirds basis. The annual revenue is over $10,000,000. The chief items of expenses for maintenance and operation are: Schools, $900,000; public library, $40,000; police department, $425,000; fire department, $300,000; public health, $75,000; public markets, $20,000; city hospitals, $65,000; city homes, $86,000; outside poor, $40,000; streets and highways, $275,000; public scavenger work, $75,000; lighting, $215,000; sewers and drains, $61,000. There are nine hospitals, the largest of which are the City Hospital, the Essex County Hospital for the Insane, Saint Michael's, Saint James', Saint Barnabas', and the German hospitals. There are 14 homes and four orphanages. The House of the Good Shepherd is a home and a reformatory. The Little Sisters of the Poor have a home for the aged over 60 years of age. There are 170 churches, representing a large number of denominations, 174 lodges, 185 societies, 163 associations, and 92 clubs. There are 46 public schools, 786 teachers, and 38,125 pupils. The value of the public school property is $2,632,000. There are 21 Roman Catholic parish schools, with 204 teachers and 9,820 pupils. There are 40 private schools, including colleges, academies, business colleges, kindergartens, and elementary schools. The free public library contains 77,297 volumes, which cost $90,000. Other libraries are the Prudential Insurance Company's Law Library and the Library of the Lawyers' Club. The New Jersey Historical Society has a collection of great historical value. Pop. (1900) 246,070; (1905) 283,289; (1910) 347,469.

NEWARK.

NEWARK: village in Wayne co., N. Y.; on the Erie canal, the West Shore, the Northern C., and the New York Central and Hudson River railroads; 176 m. w. by n. of Albany, and 30 m. e. by s. of Rochester. It is in a fertile agricultural region, but the village has considerable manufacturing interests, including tinware works, paper-box factories, glass factory, canning and preserving factory, etc. Newark has a large trade in farm and dairy products, fruit, and its manufactured articles. Its educational institutions are the Union Free School and Academy, the public elementary schools and the free public library. There are 10 churches, and a number of church and literary charitable and educational societies. The State Custodial Asylum for Feeble-Minded Women is located here. The three banks have a combined capital of $175,000.

It was settled in 1820 by people from Rensselaer county in the eastern part of the state. It was incorporated as a village in 1825. The government is vested in a president and 8 trustees, 2 of whom are elected each year. Pop. (1900) 4,578; (1910) 6,227.

NEW'ARK: city, cap. of Licking co., O.; on the Licking river and the Ohio and Erie canal; 33 m. n.e. of Columbus. The Baltimore and Ohio, and the Pittsburg, Cincinnati and St. Louis roads furnish rail communication with all parts of the country. It is in an agricultural region, and in the vicinity are valuable deposits of sandstone, extensive coal-fields, and natural gas. The chief manufactures are glassware, chemical instruments, carriages, hardwood, bottles, electric cars, locomotives, machine-shop products, rope, foundry products, flour and lumber products. There are 21 manufacturing establishments in which there are 7,460 employees. The streets are well paved and well kept. The State Encampment Ground, and the Auditorium, a fine theatre erected as a memorial to dead soldiers of the civil war, are of much interest. There are 15 churches, a high school, public and parish elementary schools, and a public library, established in 1877. The six banks have a combined capital of $690,000; and the annual amount of business transacted is $3,000,000. It was settled in 1802 by a colony from the eastern part of the United States. The government is administered under the charters in accordance with the Ohio State Municipal Code. Pop. (1890) 14,270; (1900) 18,157; (1910) 25,404.

NEW'ARK: market-town and municipal borough of England, county of Notts, on the Great Northern, and the Midland railways, and on a navigable branch of the river Trent, 16 m. s.w. of Lincoln. The parish church, a large and elegant edifice, though often rebuilt, still shows traces of its original Norman character. The castle of N., in which King John died 1216, was built early in the 12th c. N. is said to be the greatest malting town in England; there are flour mills, breweries,

and trade in corn, malt, flour, cattle, wool, and coal. Pop. (1906) about 15,000.

NEW BED'FORD: city, one of the caps. of Bristol co., Mass.; on the Acushnet river, three m. from its entrance to Buzzard's Bay, and on the New York, New Haven & Hartford railroad: 5 m. s. of Boston; 31 m. s.e. of Providence. It is connected with Fall River, Brockton, Onset, and Dartmouth by electric lines, and by steamers with New York, Martha's Vineyard, and other places. It has a fine harbor and is a port of entry. A bridge, 4,000 ft. in length, which crosses the estuary of the river, connects it with the town of Fairhaven. The site of the city was discovered by Bartholomew Gosnold 1602; was purchased of the Indians 1652, about which time a settlement was formed; and with other territory was incorporated as the town of Dartmouth, 1664. It was separated from Dartmouth and incorporated 1787, but included the present area of Fairhaven, which became a separate town 1812. A city charter was not secured till 1847. During the revolution, the British burned the wharves and all the shipping in the harbor. From an early period, N. B. was largely engaged in whale-fishing. This industry reached its height 1854, when the fleet numbered about 400, since which time it has declined, until it employs hardly one-fifth as many ships.

The chief manufacturing establishments are 41 cotton mills, representing a capital of $24,000,000, and having 1,603,080 spindles and 16,000 employees; the Twist Drill Company, 500 employees; cordage works, 400; one of the large shoe factories has 500 employees; woolen mill, 200; glass works, 300; paint works, 500; and 50 other industries, all giving employment to thousands of people. New Bedford ranks first of the cities of the United States in the manufacture of fine cotton goods and fine cotton yarns, and second in the number of spindles. A system of works, with a reservoir of 300,000,000 gallons capacity, supplies the city with water from the Acushnet river. There is a street railroad, an electric fire-alarm telegraph, and an organized fire department. The streets are well laid out and lighted with gas.

Among the prominent buildings are the government building, the city hall, county court-house, the Merchants' National Bank, Masonic and Odd Fellows' buildings, Saint Luke's Hospital, St. Mary's Home for Aged and Orphans, and a State Armory. The public parks have a combined area of about 260 acres. The bridge which spans the harbor and connects Fairhaven and the east side with the city cost $1,500,000. The educational institutions are 30 public schools, 5 parish schools (R. C.), the Swain Free School, a State Textile School, a kindergarten (R. C.) and a public library which contains about 74,000 volumes. There are 50 churches, several of which are fine buildings. The national and trust company banks have a com-

bined capital of $2,800,000; the savings banks have deposits amounting to $22,161,694.

The government is administered under the revised charter of 1896, which provides for a mayor, elected annually, a board of aldermen and a council. There are 6 aldermen and 24 members of the council, 4 from each ward. The mayor appoints, subject to approval of the board of aldermen, the license and the park commissions and the board of health. The council elects the officers of the fire department, the overseers of the poor, and the water board. Pop. (1910) 96,652.

NEW BERN, *nē bërn:* city, cap. Craven co., N. C., and a port of entry; on the w. bank of the Neuse river at its confluence with the Trent; 107 m. s.e. of Raleigh, 90 m. n.e. of Wilmington. The Atlantic and North Carolina, the Atlantic Coast Line, and the Pamlico, O. & W. railroads furnish rail communication with other points, and regular lines of steamers ply to Norfolk, Baltimore, and New York. At this point the Neuse is about two m. and the Trent one-half m. wide. The Trent is crossed by a bridge.

The chief industrial establishments are lumber and planing mills, grist mills, shingle factories, fertilizing works, ice factory, knitting mill, pickle works, turpentine distillery, shipyard, carriage factory, lime kiln, canning factory, and the Atlantic & North Carolina railroad shops, in all having 2,500 employees. There is an extensive trade in lumber, cotton, turpentine, vegetables, and fish. The prominent buildings are, a government building (court-house, custom-house, and post-office), the county court-house, jail, County Home, and the opera house. The educational institutions are the public schools, separate for white and colored. There are 10 church edifices and others in contemplation. The three banks have a combined capital of $152,000. The government is vested in a mayor, board of aldermen, and a council of 12 members. The electric-light plant and the water-works are owned and operated by the city.

The place was settled by Swiss Protestants 1701, and from the organization of the govt. till 1793 was the capital of the province of N. C. The battle of N. resulted 1862, Mar. 14, in the capture of the city by the Union forces under Gen. Burnside, and, by cutting off an important point of supplies, proved a severe blow to the Confederacy. Pop. (1910) 9,961.

NEWBERRY, *nū'bėr rĭ,* JOHN STRONG, M.D., LL.D.: 1822, Dec. 22—1892, Dec. 7: physician, sanitary administrator, and geologist: b. Windsor, Conn. He was graduated at Western Reserve Coll. 1846, and Cleveland Med. Coll. 1848; spent nearly two years abroad for study and travel; settled at Cleveland in the practice of medicine 1851–55; appointed 1855, May, assistant surgeon and geologist to an exploration expedition in the country from San Francisco to the Columbia river; took part in exploration of the Colorado river from its

mouth to the foot of the great cañon, wrote *Report on the Colorado River of the West Explored in* 1857–58 (pub. 1861); served, 1859, in an exploration of the upper Colorado and San Juan rivers, and made a valuable *Report* (pub., after long delay, 1876). In 1861, June 14, while still on duty in the war dept., he was chosen a member of the U. S. Sanitary Commission, joined with Dr. W. H. Mussey and Rev. Dr. Bellows in the first sanitary inspection of troops (at Cairo, Ill.); resigned army position, 1861, Sep., and was made sec. of the western dept. of the commission, with headquarters at Louisville, Ky., and charge of all work in the Miss. valley. Dr. N. gave a full account in *The U. S. Sanitary Commission in the Valley of the Mississippi*. He became, 1866, prof. of geology and paleontology in the School of Mines of Columbia Coll.; and created there a museum of over 100,000 specimens. He served, 1869, as head of the geological survey of Ohio, producing six vols. on geology, one on zoology, and two on paleontology; was later connected with the New Jersey geol. survey; was appointed paleontologist to the U. S. geol. survey 1884, and produced valuable monographs on fossil fishes and plants. Dr. N. was made, 1863, one of the corporate members of the Nat. Acad. of Science; 1867 was pres. of the Amer. Assoc. for the Advancement of Science, received the degree LL.D. from his college, and became permanent pres. of the N. Y. Acad. of Sciences; 1876 was one of the judges of the world's fair, Philadelphia; and 1888 received the Murchison medal of the Geol. Soc. of London.

NEW BRIGHTON: See NEW YORK CITY.

NEW BRIGHTON: borough in Beaver co., Pa.; on the Beaver river and on branches of the Pennsylvania and the Pittsburg and Lake Erie railroads; 28 m. n.w. of Pittsburg. Coal-fields and fire-clay beds are in the vicinity. It is in a section of the state in which manufacturing and industries connected with coal are prominent. The good water power furnished by Beaver river is utilized in a number of manufactories, chief of which are potteries, coffee mills, flour mills, wire, rivet, and nail factories, brick and sewer pipe works, twine factory, iron enameled bath tub works, fire-engine, keg, and brass casting works. There are about 1,000 employees in the manufacturing establishments. There are 10 churches, 12 public schools, and one parish school. It has the Beaver Valley General Hospital, a public art gallery and library, and a park. The three banks have a combined capital of $1,150,000.

It was settled in 1799 by the laborers employed to build Wolf's mill—a flouring mill; laid out in 1818, and incorporated as a borough in 1838. The government is vested in a large burgess and a council of 12 members. Pop. (1900) 6,820; (1910) 8,329.

NEW BRITAIN, *nū brĭt'an:* city, Hartford co., Conn.; 10 m. s.w. of Hartford, on the New York, New

Haven and Hartford railroad. It is in an agricultural region, but is noted for its extensive manufacturing interests. The chief manufactures are: stamped ware, hardware, foundry and machine-shop products, knit goods, hosiery and cutlery. It has a park, area, about 80 acres, well-kept streets, and a large number of fine church buildings. It is the seat of a State Normal School and the New Britain Institute; it has good public and parish schools. It was settled in 1687 and remained a part of Berlin until 1850, when it was incorporated as a town. In 1871 it was granted a city charter.

The revised city charter of 1896 provides for a mayor, who holds office two years, and a council. Some of the administrative officials are appointed or elected by the mayor and council. The sheriff, city clerk and assistant, collector, treasurer, and auditor are elected by popular vote. The town elects the school board. The city owns and operates the water-works. Pop. (1890) 16,519; (1900) 25,998; (1910) 43,916.

NEW BRITAIN, or BIRARA: large island in the Pacific Ocean; lat. 4°—6° 30′ s., long. 148°—152° 30′ e.; about 340 m. long, 23 m. wide; about 9,000 sq. m. It is e. of New Guinea, from which it is separated by Dampier's Straits, 52 m. wide. The surface is mountainous in the interior, with active volcanoes along the n. coast, which at the end of the island are very grand. Along parts of the coast are fertile plains. Forests abound, and palms, sugar-cane, breadfruit, etc., are produced. The scenery is varied and pleasing. The inhabitants, the number of whom is unknown, are described as a tribe of 'oriental negroes,' and are well formed, active, and of very dark complexion. They are cannibals, but further advanced in some arts of civilization than is usual among the Polynesians. They have a formal religious worship, temples, and images of their deities. N. B. was seen first by Le Maire and Schouten 1616, but Dampier, at a later date, was the first to land.

NEW BRUNSWICK, *nū-brŭnz'wĭk*: one of the maritime provinces of the Dominion of Canada, lying between lat. 45-48° n. and long. 64-68° w.; bounded n. by the province of Quebec and the Bay of Chaleur, n. e. by the Gulf of St. Lawrence and the Strait of Northumberland, s. by Nova Scotia and the Bay of Fundy, w. by the state of Maine; length n. to s. 230 m., greatest width 190 m., area 27,985 sq. m. Pop. (1891) 321,294; (1901) 331,120.

Topography, Rivers, Lakes, Etc.—The coast-line, 545 m., is indented by spacious bays, inlets, and harbors, most of which afford safe and commodious anchorage for shipping. The chief are Fundy (q. v.), Chignecto, and Cumberland bays, the last two mere extensions of the first; Passamaquoddy Bay in the s.; Verte, Shediac, Cocaigne, Richibucto, and Miramichi bays on the n. e.; and the Bay of Chaleur, 80 m. long by 27 broad, in the n. The province of N. B. abounds in rivers. The principal are the St. John (q. v.), 450 m. long, and the St. Croix (q. v.), 100 m., both falling into the Bay of Fundy. Of the rivers that flow e. into the Gulf of St. Lawrence, the Richibucto, the Miramichi, and the Restigouche (q. v.) are the principal. The province contains numerous lakes, one of which, Grand Lake, covers 100 sq. m.; most of the others are much smaller. The surface is in great part flat or undulating. No portion of N. B. is marked by any considerable elevation with the exception of certain districts in the n. and n. w. along the upper waters of the Tobique and Nepisiguit rivers, and in the s. where there are several ranges of hills running more or less parallel to the coast of the Bay of Fundy. These elevations are an extension of the Appalachian range. They vary in height from 500 to 2,700 feet above the sea-level. The highest of the northern peaks are Carleton, Sagamook, Big Bald Mt., Leweriffe, LaTour, and Squaw's Cap. In the s., beginning in Charlotte county and extending to Albert, the highest peaks are Mt. Pleasant, Chamcook, Bald Mt. Douglas, Eagle, Ben Lomond, Quaco Hills and Shepody Mt. In these districts the scenery is remarkably beautiful. The s. coast is bold and rocky. The shores on the e. coast and 20 miles inland are flat.

Flora and Fauna.—Wild animals abound in the province; the lakes and rivers are well stocked with fish such as salmon, trout, pickerel, chub and perch, and, along the coasts, cod, haddocks, and other fish are caught in great plenty. Moose, caribou and deer are plentiful, the last so numerous as to be in some localities a nuisance; the fur-bearing animals include the otter, mink, marten, bear, raccoon, wolverine, muskrat, lynx, squirrel, woodchuck, and fisher. Hares are also found in great numbers. Of birds the chief are wild geese, brant, ducks, grouse, partridge, plover, snipe, curlew, loon, eagle, hawk, and owl. The forests of pine, cedar, and spruce supply timber for export and formerly for extensive ship-building purposes, and are one of the chief sources of wealth in N. B., the exports of N. B. amounting to about $5,000,000 per year.

NEW BRUNSWICK, NOVA SCOTIA
& PRINCE-EDWARD ISLAND
SCALE OF STATUTE MILES.
0 5 10 20 30 40 50 60 70 80 90 100
Copyright, 1904, by Rand. McNally & Co.
GULF OF ST. LAWRENCE
ATLANTIC OCEAN
BAY OF FUNDY
NEW BRUNSWICK
NOVA SCOTIA
PRINCE EDWARD ISLAND
MAGDALEN ISLANDS
(Quebec)
QUEBEC
MAINE
SABLE ISLAND
NORTHUMBERLAND STRAIT
CHALEURS BAY
FREDERICTON
HALIFAX
Charlottetown
Yarmouth
Dartmouth
Truro
St. John
Moncton
Miramichi Bay
Cape Sable
Cape North
Bay St. Lawrence
Sydney
Louisburg
Canso
Digby
Annapolis
Lunenburg
Liverpool
Shelburne
Pictou
New Glasgow
Amherst
Windsor
Kentville
Chatham
Newcastle
Bathurst
Dalhousie
Woodstock
Grand Falls
St. Stephen
St. Andrews
Grand Manan I.

Other trees of commercial value are the birch, hemlock, beech, fir, oak, maple, elm, poplar, butternut, hacmatac, and ash.

Geology and Minerals.—The n. w. portion of the province is occupied by the upper Silurian formation, slate and limestone predominating. Next are two belts of undetermined age lying along the flanks of a wide belt of intrusive granite. Small patches of the Devonian, Huronian, and Laurentian systems comprising chiefly granite and crystalline rocks are on the Bay of Fundy. The middle and eastern parts of the province are occupied by carboniferous strata. The mineral coal is mostly impure or in thin seams, but being close to the surface is easily reached. The deposits are being worked at Grand Lake and at two or three places in Kent county. The so-called Albertite of Albert county was formerly an important source of revenue, but the pockets in which it was found have apparently been exhausted. It yielded 100 gals. of crude oil per ton. Salt springs are numerous, the springs in Kings county now being worked with profit. Copper and iron ore are found, as also antimony, nickel, galena, graphite, and manganese; gypsum, plumbago, and limestone are very abundant. The freestone of the province, unsurpassed for beauty and durability, especially for building purposes and the manufacture of grindstones and millstones, commands a high price in the States. There are large quarries of granite near St. George in Charlotte county and at Eagle Mt. in the Nerepis Valley and at Hampstead on the St. John river; slate is abundant; clay is found in most of the counties; and marble occurs in some localities.

Climate.—The climate is remarkably healthful, and the autumn—especially the Indian summer—is particularly agreeable. In the interior, the heat in summer rises to 80° and sometimes to 95°; and in winter, which lasts from the middle of Dec. to the middle of March, the mercury sometimes falls as low as 40° below zero. At Fredericton, the cap., on St. John river, 65 m. from the s. coast and 130 miles from the n. coast, the temperature ranges from 35° below to 95° above zero, and the mean is about 42°. The average rainfall is 30 inches and the average snowfall 88 inches; the total precipitation, rain and melted snow, averages 44 inches.

Industries and Manufactures.—Agriculture and lumbering are the leading industries. The soil is deep and fertile. N. B. contains a rich and extensive wheat-producing district, but the crops are insufficient to meet the requirements of the province. Other important crops are potatoes, turnips, oats and buckwheat. According to the census of 1901 the value of agricultural land was $22,329,482; buildings $16,379,456; live stock $12,629,373; total $51,338,311; and the value of the products was $12,873,480. In 1905 the principal crops were: oats 5,486,528 bu.; potatoes 5,518,732 bu.; turnips 2,645,401 bu.; buckwheat 1,157,237 bu.; and wheat 404,732 bu. Dairying is be-

coming an important part of the agricultural interests and numerous creameries and cheese factories have been established. Lumbering is the second industry in importance. Ship-building was formerly carried on to a great extent but the introduction of iron and steel vessels destroyed this industry and now only small vessels for the coasting trade are built. The sea fisheries are important; the catch in 1905 was valued at $4,671,084, the principal kinds of fish being herring, sardines, lobsters, smelt, salmon, shellfish, bait, alewives, hake, haddock and rock cod. The chief manufacturing industry is lumber-by-products; there are also pulp mills, cotton factories, iron foundries, and manufactories of nails, boots and shoes, wrappers, paper boxes, woolen cloths, candy and soap, furniture, carriages, etc. According to the census of 1901 the capital invested amounted to $20,741,170; the salaries and wages aggregated $5,748,990; the cost of materials was $10,814,014; and the value of the products was $20,972,470.

Commerce, Transportation, and Finance.—In 1902 the total value of exports, domestic and foreign, amounted to $17,657,751; imports $7,307,271; imports entered for consumption $7,245,827. There are about 1,500 m. of railway in the province, the principal lines being the Inter-colonial, owned by the Dominion with its centre at Moncton and the Canadian Pacific with its Atlantic terminus at St. John. These roads connect the cities of N. B., by junctions with other roads, with all points throughout Canada and the United States. Seven or eight steamship lines connect the province with Great Britain, and there are numerous coasting lines running to Canadian and United States ports. The ordinary revenues of the province for the year ending 1905, Oct. 31, were $865,627, derived chiefly from timber dues, Dominion subsidy, corporation taxes, liquor licenses, and succession duties. The expenditures amounted to $874,419, the principal items being education, interest, agriculture, public works, and government administration. There was a further sum of $677,630 received from loan and special trust deposits and a special expenditure on this account of $434,143. The total public debt 1905, Oct. 31, was $4,327,724, of which the sum of $3,622,846 was bonded; the assets were $834,605.

Religion and Education.—There is no state church in the province. In 1901 the principal religious denominations in numerical order were as follows: Roman Catholic 125,698; Baptists 80,874; Church of England 41,767; Presbyterian 39,496; and Methodist 35,504. By an act of 1871, a system of free public schools was established; and in 1904 there were 1,722 public schools, 1,816 teachers, and 58,759 pupils, the average daily attendance being 36,920. Beside the public schools, each county has superior and grammar schools, and the cities high schools. There are also a normal school at Fredericton, the University of New Brunswick at Fredericton, Mt. Allison Univ. (Meth.) at

Sackville, St. Joseph Univ. (Rom. Cath.) at Memramcook, a Ladies' College and Boys' Academy (Meth.) at Sackville, and several Roman Catholic schools throughout the province.

Government.—N. B. is divided into 15 counties, each of which is governed by a Municipal Council consisting of elected representatives from the different parishes. The counties are divided into parishes, each of which is governed by officers appointed by the Municipal Council. Chief towns are the city of St. John (q. v.), Fredericton (q. v.), the political capital, the city of Moncton and the town of Chatham. Among the other towns are Saint Stephen, Saint Andrews, Woodstock, Edmunston, Sussex, Dorchester, Sackville, Richibucto, Shediac, Newcastle, Dalhousie, Hillsborough, and Campbellton. N. B. sends 10 senators and 13 representatives to the Dominion parliament. The provincial govt. is administered by a lieut. gov. and council of seven, six of whom are heads of departments; and an assembly of 46 representatives elected by the people every four years. The lieut. gov. is appointed by the gov. gen. of Canada in council. The judiciary consists of a chief justice and four associate justices of the Supreme Court; six county court judges; parish court commissioners; and justices of the peace.

Cities and Towns.—New Brunswick contains three cities and a number of towns which are rising into importance. The largest of these is Saint John (q.v.), situated at the mouth of the river of that name. It is a large shipping port and lines of steamships run from it in winter to Great Britain, carrying the produce of western Canada to European markets. It has railway connection with the west by means of the Canadian Pacific and Intercolonial Railways. Saint John is also a considerable manufacturing centre. Its population is about 50,000.

Fredericton, with a population of 8,000, situated 84 miles up the Saint John river, is the capital of the Province. It is the centre of an important agricultural district and the seat of some manufacturing industries. Moncton, which has upwards of 10,000 inhabitants, is the headquarters of the Intercolonial Railway System and alsc manufactures to a considerable extent.

Chatham, at the mouth of the Miramichi river, is an important port for the shipment of lumber to Europe. Among the other towns of the Province that are worthy of mention are Saint Stephen, Saint Andrews, Woodstock, Edmunston, Sussex, Dorchester, Sackville, Richibucto, Shediac, Newcastle, Dalhousie, Hillsborough, and Campbellton.

History.—The province of N. B., together with that of Nova Scotia, originally formed one French colony, called Acadia or New France. It was ceded to the English 1713, and was first settled by British colonists 1764. Fort La Tour, situated at the entrance of the St. John river, was the scene of the struggle for Acadia between La Tour and Charnisay, and was finally captured and destroyed in

1645. In 1755 the English captured Fort Beausejour, at the head of Chiguecto Bay, from the French. In 1784 N. B. was separated from Nova Scotia, and erected into an independent colony. In the latter part of the 18th century the population was greatly augmented by the influx of Loyalists from the American colonies after the Revolutionary War. Again after the Napoleonic wars and the Irish famine of 1847 great numbers of immigrants arrived and settled in the province. It joined the Dominion of Canada 1867. Consult: Bailey and Jack, *Woods and Minerals of New Brunswick* (Fredericton 1876); Willmott, *The Mineral Wealth of Canada* (London 1898); Selwyn and Dawson, *Descriptive Sketch of the Physical Geography and Geology of the Dominion of Canada* (Montreal 1884); Perley, *On the Early History of New Brunswick* (St. Johns 1891); Cooney, *History of New Brunswick* (Halifax 1832); Hannay, *History of Acadia;* Kingsford, *History of Canada* (London 1887-98); Munro, *History of New Brunswick*; Reports of the Geological Survey of Canada, etc.

NEW BRUNSWICK: city, cap. of Middlesex co., N. J.; lat. 30° 30′ n., long. 74° 28′ w.; on the s. bank of the Raritan river, which is navigable to this point; 33 m. s.w. of New York, 26 m. n.e. of Trenton. It is on the New York division of the Pennsylvania railroad, and on the Delaware and Raritan canal, which is 75 ft. wide and 7 ft. deep, and here has its e. terminus. The location is uneven, the ground rising considerably from the river. The city has a system of water-works, is lighted by gas and electricity, and with the exception of the older portion, bordering the river, which has narrow streets, is well laid out and substantially built.

It is a manufacturing city, and has considerable trade, as it has good shipping facilities by land and water. The chief manufacturing establishments are cigar factories which have about 1,400 employees; rubber works, 1,000 employees; wall-paper factory, 500 employees; and a large number of smaller works, all of which are prospering. It is the seat of Rutgers College (q.v.), the State Agricultural and Mechanical College (q.v.), the Saint Agnes' Academy. The Theological Seminary of the Dutch Reformed Church is connected with Rutgers. It has seven public schools, three parish schools, the Gardner A. Sage Library which contains about 45,000 volumes, and the public library with about 18,000 volumes. The Saint Mary's Orphan Asylum and Home for the Aged is located here.

N. B. was settled 1681, and was known as Prigmore's Swamp, and by various other names, till 1714, when it received its present name. It obtained a royal charter 1730, and was incorporated as a city and became the county seat 1784. It suffered greatly from depredations of the British army during the revolution.

The government is administered under the charter of 1863 and is vested in a mayor, who holds office two years, and a council of 13 members. The city owns and operates the water-works. Pop. (1910) 23,388.

NEWBURGH.

NEWBURGH, *nū'bėrg:* city, one of the capitals of Orange co., N. Y.; lat. 41° 31′ n., long. 74° 1′ w.; on the w. bank of the Hudson river; 60 m. above New York, 83 m. below Albany. It is on the New York West Shore and Buffalo railroad, is terminus of a branch of the Erie road which connects with the Lehigh and the Ontario and Western roads, and has steam-ferry connection with the New York Central, the New York and New England, and the Newburgh Dutchess and Connecticut roads, which have stations just across the river, at Fishkill. It is fronted by N. Bay, around which stands a semicircular range of mountains. The river at this point is more than a mile wide, and ranges in depth from 30 to 60 ft., forming a magnificent harbor eight m. long. There are eight regular lines of steamers which connect with different points, and a large number of schooners and smaller vessels, which ply from this port. The city has direct connections with the great coal-fields of Penn., and is an important point of transhipment to cities and towns in New England and Canada. Many of the vessels carrying out coal return with cargoes of lumber. Large quantities of grain also are brought here for distribution to various eastern points.

The area of N. is about four sq. m. From the river the land rises rapidly in a series of terraces terminating in a plateau 300 ft. above the lower level and giving a magnificent view of the river and the opposite shore. Upon these terraces many fine residences have been built. The streets are lighted by gas and electricity. Water is obtained from a lake three m. away and about 275 ft. above the river, which does away with the need of fire-engines for the business portion of the city. The upper terraces are supplied from a reservoir into which the water is forced by steam-pumps. There are several volunteer fire companies, which are well organized and have a good equipment. The city is noted for its religious, educational, and charitable institutions. There are 24 churches, excellent graded schools, an academy, and several private institutions of learning, among which are three parochial schools (Rom. Cath.), and a boarding-school for girls. Besides the alms-house, there are a Home for the Friendless, St. Luke's Home, and a Home for Children. There is a Young Men's Christian Assoc., with a large membership and a fine building. A board of trade is maintained. There are 3 national banks and 1 savings bank; 4 daily, 1 semi-weekly, and 2 weekly newspapers; and a public library with 20,000 vols. The surrounding region is largely agricultural, and the Orange co. butter and milk have high fame. With this region N. has an extensive trade. The manufactures of the city are of great importance, and comprise agricultural implements and machines, brushes, paint, oil-cloth, soap, wooden-ware, and wire goods. There are also cotton, woolen, carpet, and paper mills, a carriage factory, shoe-shops, engine works, and machine-shops. Boat-building also is quite a prominent industry. N. is

a popular place for summer excursions, both on account of its picturesque beauty and its historical associations. The stone house in which Washington had his head-quarters during the revolution, and from which the order disbanding the army was issued, is preserved in its original condition, is owned by the state, and has many visitors. The first settlement by whites at N. was made 1709, and the place was then named Palatine Parish of Quassaic. The name was changed to N. 1752, and a city charter was secured 1865. Pop. (1870) 17,014; (1880) 18,049; (1890) 23,087; (1900) 24,943; (1910) 27,805.

NEWBURY, *nū'bėr-ĭ :* municipal borough and market-town of England, Berkshire, on both banks of the Kennet, 17 m. w.s.w. of Reading. The church, a specimen of the perpendicular style, was built in the reign of Henry VII.; but the tower was built by John Winchcombe, a clothier and famous citizen of N. in the reign of Henry VIII. Since 1862 an annual wool-market has been held here. In 1862 a new corn exchange was built. N. is best known for two hard-fought battles between the royalist and parliamentary forces—1643, Sep., and 1644, Oct. In the former, victory was undecided; in the latter, the army of the parliament was victorious. Pop. (1871) 6,602; (1881) 10,143; (1891) 11,002.

NEWBURYPORT, *nū-bėr-ĭ-pōrt' :* city, seaport, port of entry, and one of the capitals of Essex co., Mass.; three m. from the Atlantic Ocean; on the s. bank of the Merrimac river, and on the Eastern division of the Boston and Maine railroad; 35 m. n.e. of Boston. It is on rising ground, has wide and shaded streets, with a line of street cars, and is connected with Amesbury by a horse railroad. High st., parallel with the river, 3 m. long, is one of the finest streets. The mall has recently been remodelled and beautified, and there are two other public parks. A pond near High st., covering 6 acres, is surrounded by a fine promenade. The city has 12 churches: 4 Congl., 2 Presb., 2 Meth. Episc., 1 Baptist, 1 Prot. Episc., 1 Unitarian, and 1 Rom. Cath.; a high school, training school, and numerous schools of various grades (total enrolment in public schools 1,738); a free library with more then 25,000 vols., and a free reading-room. Among the benevolent institutions are the Anna Jaques Hospital and the Old Ladies' Home. There are 2 weekly and 2 daily newspapers, one of which was founded 1792; and 3 national and 3 savings banks. There are 9 shoe factories, 6 large cotton-mills, a distillery, and an iron foundry. There are also carriage-shops and a silver-ware factory, while among other lines of manufactures are hats, combs, pumps, and steam-engines. The manufactures give employment to about 2,500 people. There is an organized fire dept. The harbor is large and safe, but a sand-bar obstructs the entrance. Ship-building is an industry of some importance, and a large number of vessels of various sizes are owned by residents of the city. Among the public buildings are the court-house,

custom-house, city hall, and a marine museum. The Y. M. C. A. and the Y. W. C. U. eaeh have a new building. The prineipal streets are paved, and supplied with electric lights, and a system of sewerage was eompleted 1890. The first settlement of N. was about 1635, and the place was prominent in eolonial history. From this point the first privateers were sent out in the revolution and in the war of 1812. In later years its early record for patriotism has been maintained. N. was separated from the town of Newbury 1764, and obtained a eity charter 1851. In one of the ehurehes may be seen the tomb of George Whitefield, who died at N. 1770. The mayor, eity counеil and board of aldermen are elected annually. The eity owns and operates its water-works, which were bought from a private eompany. Pop. (1910) 14,949.

NEW CALEDONIA, *nū kăl-ė-dō'nĭ-a:* one of the larger islands of the s. Paeifie Oeean; a Freneh possession, about 720 m. e.n.e. of the coast of Australia (Queensland); about 240 m. long, average width 25 m. It is of voleanie origin, is traversed in the direction of its length, n.w. to s.e., by a range of mountains, which in Mt. Humboldt attain a height of 5,380 ft., and is surrounded by sand-banks and coral-reefs. There are secure harbors at Port Balade and Port St. Vincent. In the valleys the soil is fruitful, produeing the cocoanut, banana, mango, breadfruit, etc. The sugar-cane is eultivated, and the vine grows wild. The coasts support eonsiderable tracts of forest, but the mountains are barren. The inhabitants, who resemble the Papuan race, eonsist of different tribes, some of which are cannibals. N. C. was discovered by Captain Cook, 1774. In 1853 the Freneh took possession of it, and it has sinee 1872 been used by the French authorities as a penal settlement. In 1878 some of the natives rose in insurreetion and massacred a number of the white residents. Pop. (1901) 51,415.

NEWCASTLE: eity, port of entry of Newcastle co., Del.; on the Delaware river, and on the Philadelphia and Reading and the Philadelphia, Baltimore and Washington railroads, about 7 m. s. of Wilmington. It was settled, in 1640, by Swedes. Later it was oeeupied by the Dutch and then by the English. In 1875 it was ineorporated. Newcastle was the place where, in 1682, William Penn landed in Ameriea. It is in an agricultural region where mueh attention is given to fruit orchards and market gardens. Its chief manufactures are flour, brick, canned goods, woolen and cotton goods, iron produets, and men's underclothing. Newcastle has a library founded in 1812, several churches, banks, and schools. Pop. 3,500.

NEW CASTLE, *nū kă'sl:* city, cap. of Lawrence co., Penn.; 52 m. n.w. of Pittsburg; on the Beaver and Erie canal, at the junction of the Shenango river and the Neshannock creek, which unite to form the Beaver river. Six lines of railroad give it connection with all points. The largest blast furnace, two of the largest tin-plate mills, the largest cement works in the world, are located there, while according to population the city has relatively the largest freight tonnage in the United States, in 1903 reaching the total of 15,000,000 tons. The United States census of 1900 gives the number of establishments as 216; capital, $13,308,220; average number of wage earners, 4,992; wages, $3,226,669; cost of material used, $13,646,648; value of products, $21,-046,842. The city has six banks with a combined capital of $1,225,000, deposits of $7,000,000, and surplus of over $1,650,000. It also contains the United States Government building, containing the post-office, the city hall, the opera house, and the Y. M. C. A. building, containing a large library, presented by Ira D. Sankey, the evangelist. The Shenango Valley Hospital and the Almira Home for Aged Women are located there. There are also 35 churches, a high school, 13 public schools, parish schools and business college. The city was first settled 1800, became a borough 1869, and received a charter 1875, revised 1887, under which the government is vested in a mayor elected for three years, and a council consisting of two legislative bodies, the select council of seven members, who confirm the appointments of heads of administrative departments made by the mayor, and the common council of 14 members. The city has also street, fire, police, health, and charities departments. Pop. (1900) 28,339; (1906) 35,000; (1910) 36,280.

NEWCAS'TLE (Henry Pelham-Clinton), fifth Duke of, and twelfth Earl of Lincoln: 1811–1864, Oct. He was educated at Christ-Church, Oxford. He represented South Notts in parliament 1832–46, when he was ousted by the influence of his father, the fourth duke, for supporting Sir R. Peel in his free-trade measures. He was a lord of the treasury in 1834–5; and first commissioner of woods and forests in the Peel administration 1841–46. He was then made chief sec. to the lord-lieut. of Ireland, but went out of office with his chief a few months afterward. He succeeded to the dukedom 1851, and returned to office 1852, filling the post of sec. of state for the colonies (which formerly included the dept. of war) in the Aberdeen govt. In 1854, June, N. became secretary of state for war, but later resigned because of severe criticism. He was reappointed colonial sec. in the second administration of Lord Palmerston, and held the seals with general approval from 1859 till his death.

NEWCAS'TLE (THOMAS PELHAM HOLLES), Duke of: prime minister of the first two Georges: 1693–1768, Aug.; of the noble family of the Pelhams. While a very young man he succeeded to the family peerage by the death of his father, Lord Pelham; also to the vast estates of his uncle, the Duke of Newcastle, so that when he became of age he was one of the largest owners of land in the kingdom. George I. rewarded his attachment to the House of Brunswick by creating him first Earl of Clare, afterward Duke of Newcastle. He was made sec. of state when but 30 years old, though the king declared that he was not fit to be chamberlain to the smallest court in Germany. There was a strain of the grotesque in his character. Macaulay says of him that 'his gait was a shuffling trot; his utterance a rapid stutter; he was always in a hurry; he was never in time; he abounded in fulsome caresses and in hysterical tears.' Yet he must have had some ability, for he was 30 years sec. of state, and for nearly ten years first lord of the treasury. He was a good manager of parliament, and he had the qualities of industry and honesty. He served under Sir R. Walpole; retained his secretaryship in the 'broad-bottomed administration,' 1744; and 1754 succeeded his brother, Mr. Pelham, as head of the govt. In 1757 he was compelled to take the first William Pitt (afterward Earl of Chatham) into his ministry, and to give him the lead in the house of commons, and the supreme direction of the war and of foreign affairs. A succession of brilliant victories followed—N. being only nominal head of the administration—and the great commoner had almost brought the war to a successful termination when the accession of George III. led to the resignation of Mr. Pitt, and the replacement of N., 1762, May, by Lord Bute, as head of the ministry. N. declined a proffered pension, with the remark that if he could no longer serve he would not burden his country. In the Rockingham ministry, formed 1765, N. filled the office of privy seal. His title descended to Henry, 9th Earl of Lincoln, whose great-grandson was the 5th Duke of Newcastle.

NEWCASTLE, WILLIAM CAVENDISH, Duke of: see CAVENDISH, WILLIAM.

NEWCAS'TLE-UNDER-LYME, *-līm*: parliamentary and municipal borough of England, county of Stafford, 16 m. n.n.w. of the town of Stafford. A branch railway connects it with the N. Staffordshire line, and a branch canal with the Grand Trunk Navigation. One of its churches, rebuilt early in the 18th c., has a very old square tower of red sandstone. The Free Grammar School was founded 1602. Hats are the principal manufacture, and silk, cotton, and paper mills are in operation. N. is surrounded by famous potteries, and coal mines are worked in the vicinity. Pop. (1881) 17,506; (1890) 18,452.

NEWCASTLE-UPON-TYNE.

NEWCAS'TLE-UPON-TYNE, *-tīn:* chief town of Northumberland, England. It has the privileges of a county of itself, and is the see of one of the new bishoprics provided for in the act of 1878 (when £50,000 should be raised). Gateshead, on the opposite side of the river, is in a different county and has a separate jurisdiction, but is virtually a part of Newcastle. Pop. (1871) 128,443; (1881) 145,228: Gateshead (1871) 48,627; (1881) 65,873: together (1881) 211.101; (1891) 186,345; (1901) 214,803.

The Romans had a stationary camp here, called Pons Ælii—one of the chain of forts by which the Wall of Hadrian was fortified. On the withdrawal of the Romans, the deserted camp became the residence of a colony of monks, and the town was called Monkchester. Robert, eldest son of the Conqueror, began to build a castle here, 1079 or 80—hence the modern name New Castle. William Rufus built his brother's castle, surrounded the town with a wall, and gave the inhabitants peculiar privileges. The present castle, which displays better than any other in England the genius of Norman military architecture, was erected by Henry II., 1172–77. N., being made the rendezvous of the vast armaments which the first three Edwards led into Scotland, was in their time surrounded with new walls of unusual strength and magnitude; portions yet remain.

The town stands partly upon an elevated platform, and partly upon the n. bank of the river. The more ancient houses in the lower part of the town are chiefly of timber; those in the centre of the town are mostly of stone; but the houses generally are brick. Through the instrumentality chiefly of one man of humble origin—Richard Grainger—N. has, in modern times, received the addition of many elegant streets, squares, and public buildings. The river is crossed by three bridges—the High-level Bridge; the Redheugh Bridge; and a swing bridge (completed 1874), one of the largest structures of the kind in the world. The High-level Bridge is one of the engineering triumphs of Robert Stephenson. It consists of six cast-iron arches, supported upon piers of masonry. The length of the viaduct is 1,337 ft.; height of railway above high-water mark, 112. It has a broad carriageway, by which the ordinary traffic avoids the precipitous streets on both sides of the river, with passenger-path on each side, and the railway above. A quay, at which the depth of water at ebb-tide is 22 ft., has been constructed by the corporation, at a cost of over a quarter of a million pounds, or at the rate of about £120 ($600) per lineal yard.

There are 16 churches and chapels in the town connected with the Established Church, and about 60 belonging to other classes of worshippers. The mother-church (St. Nicholas) is a noble edifice, chiefly in the decorated style; its steeple, singularly light and bold, is nearly perpendicular. In the Guild Hall, an old and inconvenient building by the river-side, the town assizes are opened, and the quarter sessions held. Under the

Guild Hall proper, there is an exchange for the merchants, shipowners, and brokers of the quay-side. There are two theatres—the Royal (the great ornament of Grey street, the handsomest street in the town), and the Tyne theatre in Westgate street. N. has two monuments—a column surmounted by a statue of Earl Grey, to commemorate the passing of the Reform Bill; and a bronze statue to George Stephenson.

The trade of N. is chiefly in coal, and in those articles in the production of which great heat is required. The N. coal trade had its origin in the reign of Henry III. This industry is not confined to N., but is spread over the greater part of the seaboard of Northumberland and the whole of Durham. There is immense manufacture of iron and lead. At N. the British railway system had its origin. Here, as might be expected, locomotive and engineering establishments are found upon a great scale. The ordnance works of Sir William Armstrong are at Elswick, the w. part of N. Iron ship-building and engineering are extensively carried on upon the Tyne. N. has an important place in manufacture of soda. Glass-staining has attained great perfection. The fire-brick trade is of gigantic proportions.

The river Tyne, from the sea to N., forms a natural dock for shipping. Three artificial docks have, however, been constructed at a cost of £1,700,000 ($8,273,000). Recent improvements on a large scale have been made by the River Tyne Commission. The entrance and many parts of the river have been deepened by dredging. The depth of water on the bar has been increased from 6 to 33 ft. at low water.

Of benevolent institutions there are an infirmary, a dispensary, asylums for the blind, the deaf and dumb, and two orphanages. The Literary and Philosophical Soc., the Soc. of Antiquaries, the Nat. History Soc., the Mechanics' Institution, and the Institute of Mining Engineers (to which has been recently added a large hall, as a memorial of Nicholas Wood, an engineer of celebrity) are thriving institutions. A College of Physical Science, with four professorships (geology, experimental philosophy, chemistry, and mathematics), was established 1871, in connection with the univ. for Durham; and there is also in N., associated with the same univ., a college of medicine.

Lords Stowel, Eldon, and Collingwood, Mark Akenside, and Hutton, mathematician, were natives of N. Intimately connected with it, though not born in it, were Thomas Bewick, engraver; Robert Morrison, Chinese scholar; and George and Robert Stephenson.

NEW CHRISTIANS: Spanish Jews who, about the close of the 15th c., outwardly conformed to the requirements of the Christian faith, in order to escape persecution, while retaining secretly their attachment to Judaism and practicing many of its rites and forms. Their clandestine faith and worship being discovered, or at least suspected, many of their chief men were brought before the Inquisition, imprisoned, their goods confiscated, and the ban of excommunication was pronounced against all who should harbor, help, or favor them. Soon arrests grew so numerous that the Dominican convent at Seville was overcrowded with prisoners. The Inquisition then removed to the castle of Triana near by, and every one was solemnly commanded, by special edict, to inform against all who relapsed or were suspected of relapsing to Judaism. The persecution rapidly extended over all Andalusia, so that in one year about 300 N. C. were burned at the stake in Seville alone, over 2,000 in the surrounding districts, while fully 17,000 had to suffer less penalties. Confiscation of their property invariably followed the death penalty; and the great wealth of many of the persecuted inflamed the zeal of the persecutors. Very many of the N. C. consequently fled to Portugal, where, as yet, Jews were numerous and were treated with leniency. They, indeed, by their superior ability, enterprise, and intelligence, had in a measure taken the place formerly held by the Moors, filling nearly all the learned professions and being the leaders in all mercantile pursuits. They had an academy at Lisbon, from which went forth some of the most learned and able mathematicians, authors, geographers, physicians, and theologians of Portugal. Their very prosperity and superior ability, however, here too invited persecution, through the envy and greed of the church authorities. An edict for their expulsion was followed by fierce and bloody persecution. The immediate occasion for the latter was the perhaps injudiciously expressed unbelief of a New Christian in the genuineness of an alleged miracle performed at Lisbon, while the people were fasting and praying for relief from the plague and famine that were raging. This was 1506, Apr. 19, when the incautious unbeliever was seized by the frantic populace and burned alive. His death seemed to be the signal for a general outburst of ferocity, which raged for 3 days, during which time 2,000 men, women, and children are said to have been cast into the great fires that were kept up in the public squares, and burned. This occurred during the king's absence from the city. When he returned, he promptly punished the leaders of the persecution. But he could not prevent a general exodus of Jews and N. C. from Portugal to Holland. While many claim that their exodus was complete from both Portugal and Spain, there is little doubt that a considerable number remained, especially as a royal mandate ordered all children of the Hebrew race, under 14 years old, to be retained and in-

structed in the Christian religion. At all events, not a few of the oldest families in Portugal still have strongly marked Jewish physiognomies; and while few traces of the mixed faith and worship of the N. C. remain, there are still some indications thereof found in remote provinces, such as a partial observance of the Hebrew day of atonement, abstinence from leavened bread during the passover, and certain forms of Jewish prayer.

NEW'CHURCH: thriving town of Lancashire, England, 19 m. n. of Manchester, in Rossendale, not far from the source of the Irwell. It has had recent and rapid growth. There are numerous cotton and woolen manufactories, employing many operatives. Coal is wrought in the neighborhood, and there are numerous large quarries of excellent freestone. The neighborhood is very populous, abounding in manufactories and other public works. Not much more than a mile w. of N. is Rawtenstall, a rapidly increasing town. Pop. of N. about 4,000.

NEW CHURCH, THE: see SWEDENBORG, EMANUEL:

NEW-CHWANG', or NEU-CHWANG', or NIUCHWANG', treaty-port in China: see YING-TZE.

NEW COLLEGE, OXFORD: usual name for the College of St. Mary of Winchester, Oxford, Eng.; founded by William of Wykeham, bp. of Winchester and lord high chancellor, 1376. The buildings are magnificent, and the gardens of great beauty. The most remarkable peculiarity of New College is its connection with Winchester School, another noble foundation of Wykeham. After the kin of the founder (to whom a preference was always given), the fellows were to be taken from Winchester. By the ordinances under 17 and 18 Vict. c. 81, considerable changes were introduced, but the connection of the college with Winchester was in great measure preserved. The number of fellows was fixed at 30. Of these fellowships 15 are open only to those who have been educated at Winchester, or who have been for 12 terms members of New College. The other 15 are open without restriction. The value of the fellowships is not to be more than £200 per annum, so long as their number is less than 40. There are also to be 30 scholarships, tenable for five years, of value not less than £80 per annum, inclusive of rooms, to be appointed by the warden and fellows of New College, by the election of boys receiving education at Winchester School. No conditions of birth are to be regarded in the election either of fellows or scholars. By a subsequent statute, the chaplains are made 3 in number, and 8 to 10 choral scholars are added, to be on equality with the other scholars. This college presents to 40 benefices, and elects the warden of Winchester College.

NEW'COMB, SIMON, LL.D.: astronomer; b. Wallace, N. S., 1836, Mar. 12; son of a teacher, and educated at home. He came to the United States 1853; was teacher in Md., 1854–56; became, through Joseph Henry and J. E. Hilgard, 1857, computer on the *Nautical Almanac*, at Cambridge, Mass.; took the course, and three years' graduate study, in Lawrence Scientific School (Harvard) 1857–61; was appointed prof. of mathematics in the U. S. navy 1861, with duty at naval observatory, Washington; had charge of construction and mounting of the 26-inch equatorial telescope; visited the Saskatchewan region 1860, to observe an eclipse of the sun, and Gibraltor 1870–1, for a like purpose; was sec. of the commission to organize expeditions for observing the transit of venus 1874, Dec. 9; senior prof. of mathematics in the U. S. navy 1877, with rank of capt., and in charge of the office of the *American Ephemeris and Nautical Almanac;* went, 1882, to the Cape of Good Hope to observe the transit of Venus; became, 1884, prof. of mathematics and astronomy at Johns Hopkins Univ., Baltimore; and has assisted in equipping the Lick Observatory, Cal. He was made LL.D. by Columbian Univ., Washington 1874, Yale 1875, Harvard 1884, and Columbia 1887; master of mathematics and doctor of nat. philos. by Leyden, 1875, at the ter-centennial; PH.D. by Heidelberg 1886, at the 500th anniversary; was given the gold medal of the Royal Astronomical Soc., London, 1874, and the great gold Huygens medal, for the best work in 20 years by Leyden 1878; and 1887 the Russian govt. ordered his portrait for the Pulkowa gallery of famous astronomers. He was elected royal astronomical associate, London, 1872; corresponding member of the Institute (France) 1874; foreign member of the Royal Soc., London, 1887; and, the same year, one of the council of 8 of the Astronomische Geshellschaft; subsequently he received honorary membership from almost all the learned societies in the world. In 1893 he became associate of the Institute of France, the first native American since Franklin to receive that honor, and was also made an officer of the Legion of Honor. In 1890 he received the Copley medal from the Royal Society, in 1898 the Bruce medal from the Astronomical Society of the Pacific, and was also awarded the Schubert prize by Russia,

two bronze vases by Tokio Univ., the Sylvester medal from John Hopkins Univ. for which institution his portrait was painted in 1897. Among other honorary univ. degrees are SC.D. Cambridge 1896, D.C.E. Oxford 1899, LL.D. John Hopkins 1902. He retired from his professorship in the John Hopkins Univ. 1893, resigned from active duty in the navy and from the senior professorate of mathematics and superintendency of the *Nautical Almanac* office at the required age of 62 in 1897, from the editorship of the *Amer. Journ. of Mathematics* 1901, and afterwards independently devoted his time to pure and popular science. From 1903 he edited the department of Astronomy and Mathematics in the *Encyclopedia Americana.* His miscellaneous scientific papers and larger works fill a long bibliography. Among well-known works are text books on astronomy and mathematics, *The Stars* (1901); *Astronomy for Everybody* (1902); *Reminiscences of an Astronomer* (1903).

NEWCOME, *nū'kŭm*, WILLIAM, D.D.: 1729, Apr. 10—1810, Jan. 11; b. Abingdon, Berkshire, England. He was educated at Oxford. In 1765 he was made chaplain to the Earl of Hertford, and next year became bp. of Dromore, Ireland; 1775 of Ossory; 1779 of Waterford; and 1785 abp. of Armagh. He was a close Bible student and author of a number of scholarly works, some of the more important being: *Harmony of the Gospels* (1778); *Observations on Our Lord's Conduct as a Divine Instructor* (1782); *New Critical Version of the Twelve Minor Prophets and Ezekiel* (1785–88); *An Historical View of the English Biblical Translations* (1792); *An Attempt toward Revising Our English Translation of the Greek Scriptures* (1796).

NEW COM'EDY, THE: see DRAMA (Comedy).

NEWDIGATE, *nū'dĭ-gāt*, Sir ROGER: 1719, May 30—1806, Nov. 25; b. Arbury, Warwickshire, England. He was educated at Oxford, where he won high rank in classical scholarship. He was a member of the house of commons 1751–80, representing the Univ. of Oxford. He was a liberal benefactor of the institution, and, besides other gifts, left funds for the N. prizes annually awarded for the best verses in English on subjects relating to the arts of painting, sculpture, and architecture.

NEWEL, n. *nū'ĕl* [Norm. F. *nowel* or *nuel;* F. *noyau*, a stone of fruit, a nucleus, a newel—from mid. L. *nucālĕ*, belonging to a nut—from L. *nucem*, a nut]: the upright pillar or spindle round which the steps turn in a winding staircase, and by which they are supported from the bottom to the top: in turret-stairs it is a plain roll; but in Elizabethan and old Scotch castles there are frequent examples of newels highly ornamented.

NEWEL, n. *nū'ĕl* [from *new*]: in *OE.*, a new thing; a novelty.

NEWELL, *nū'ĕl*, HARRIET (ATWOOD) : 1793, Oct. 10—1812, Nov. 30; b. Haverhill, Mass.; daughter of Moses Atwood. She became interested in Christian missions in early youth, and was one of the first two American women to attempt missionary work in India. Only ten days after her marriage, at about the age of 19, she sailed with her husband, the Rev. Samuel Newell (q.v.), in company with the Rev. Adoniram Judson (q.v.) and his wife, for Calcutta, India, 1812, Feb. 19. The East India Co. not allowing them to remain in Calcutta, they sailed for Mauritius, and thence to the Isle of France. While delayed in the Bay of Bengal by a series of storms, Mrs. N. had a violent attack of fever. A daughter, born a little before the close of the voyage, lived only five days and was buried in the sea. The health of the mother rapidly declined, and she died of consumption soon after reaching the island. Her *Memoirs* were published by her husband; and her *Life*, with many of her letters, and a memorial sermon by Leonard Woods, D.D., passed through a number of editions and was translated into several languages. Her early death under such sad and peculiar circumstances attracted wide attention to the great missionary work then in its incipiency in this country, and aroused a strong and permanent interest in it.

NEW'ELL, ROBERT HENRY (pen-name ORPHEUS C. KERR): born New York, 1836, Dec. 13. He was one of the editors of the *New York Mercury* 1858–62, was connected with the *World* 1869–74, and was editor of *Hearth and Home* 1874–76. During the civil war, he wrote a large number of humorous papers under the name of Orpheus C. Kerr (office-seeker), which gave him wide popularity and which have been republished in 4 vols. Among his works are: *The Palace Beautiful, and Other Poems; The Cloven Foot; Versatilities; The Walking Doll;* and *There Was Once a Man* (1884). He died 1901, July.

NEW'ELL, SAMUEL: 1785, July 25—1821, Mar. 30; b. Durham, Me. He lost his parents when quite young, went to Boston when 14 years of age, and was assisted by his employer and other friends in obtaining an education. He graduated from Harvard College 1807, and entered Andover Theol. Sem. 1809. He was one of the four students of the latter institution who, 1810, called the attention of the Mass. Assoc. of Congl. Ministers to the foreign missionary field; and thus began the movement that led to the formation of the American Board. With four associates, he was ordained at Salem, Mass., 1812, Feb. 5, for the foreign missionary work. He married Harriet Atwood (q.v.) Feb. 9 of the same year, and Feb. 19 sailed for Calcutta. Missionaries not being allowed to stay at Calcutta, they sailed for the Isle of France. On the voyage, an infant daughter of N. died, and Nov. 30 Mrs. N. died at the Isle of France. N. sailed to Ceylon, and later to Bombay, where, with the Rev. Gordon Hall, he wrote *The Conversion of the World, or the Claims of Six Hundred Millions.* He married Miss Thurston 1818. He died of cholera at Bombay.

NEW ENGLAND, *nū ĭng'gland:* collective name popularly given to the six n.e. states—Maine, New Hampshire, Vermont, Massachusetts, Rhode Island, and Connecticut—65,000 sq. m. The people have been known colloquially as Yankees, though that term was extended during the late civil war to all residents of the northern states, and is now tending more and more to an indiscriminate application correspondent in extent to the whole United States (see YANKEE). The population of N. E., until within the last half of the 19th c., was descended mostly from an English Puritan ancestry, though with some other English, some Huguenot, and some Scotch infusion: they are engaged in commerce, fisheries, and manufactures, and have been noted from early days for industry, enterprise, and general diffusion of education. This region was granted by James I. to the Plymouth Company 1606, under the title North Virginia, and the coast was explored by Captain John Smith 1614. See titles of the several states.

NEW FOREST, *nū fŏr'ĕst:* district in Hampshire (q.v.) in England; triangular in shape; bounded w. by the river Avon, s. by the coast, and n.e. by a line running from the borders of Wiltshire along the Southampton Water; area about 64,000 acres. This triangle appears to have been a great wooded district from earliest times, and its present name dates from the Norman Conquest, when it was regularly afforested. Since that period it has remained a possession of the crown, subject to rights of 'pannage,' vert (greenwood), and turf-cutting, claimed by various estates in or near the Forest. During the 'pannage' month, which commences at the end of Sep. and lasts six weeks, the borderers drive in herds of swine to feed on the mast in the Forest, and this right they obtain by paying a small annual fee in the stewarts court at Lyndhurst, which is considered the capital of the Forest. Formerly, this district was the haunt of numerous 'squatters,' but their huts are now few. Gypsies, however, still congregate here. In 1854 a commission was appointed to examine the extent and nature of the rights of pannage, etc., claimed by the foresters and borderers, and in a large majority of cases the claims were confirmed. The principal trees in the Forest are the oak and beech, with large patches of holly as underwood. The oaks have been much used as timber for the British navy. A small breed of pony lives wild in the Forest. Tracks of exquisite woodland scenery are frequent. The afforestation of this district by the Conqueror, enforced by savagely severe Forest laws, was regarded as an act of the greatest cruelty, and the violent deaths of both his sons, Richard and William Rufus—both killed by accidental arrow-wounds in the Forest—were deemed special judgments of Providence.

NEWFOUNDLAND.

NEWFOUNDLAND, *nū'fond-land:* large island and British colony of N. America, not yet incorporated with the Dominion of Canada, at the mouth of the Gulf of St. Lawrence, separated from Labrador on the n. by the Strait of Belle Isle (about 12 m. broad), and extending in lat. from 46° 38′ to 51° 37′ n., and in long. from 52° 44′ to 59° 30′ w. In shape it resembles an equilateral triangle, of which Cape Bauld on the n., Cape Race on the s.e., and Cape Ray on the s.w., form the angles. It is 317 m. in greatest length from Cape Ray to Cape Norman; 316 m. in greatest breadth from Cape Spear to Cape Anguille; about 42,000 sq. m. Pop. (1869) 146,536; (1874) 161,486; (1881) 179,509; (1891) 197,934; (1901) 216,615.

The island, as seen from the sea, presents a wild and sterile appearance. Its surface is diversified by mountains, marshes, barrens, ponds, and lakes. The mountains in the Avalon peninsula (stretching s.e. from the main portion of the island, and connected with it by an isthmus only about three m. in width) rise, in some cases, 1,400 ft. above sea-level; while, both here and along the w. shore, the height of 1,000 ft. is frequent. The number of the lakes and 'ponds' (the latter name used indiscriminately for a large or a small lake) is remarkable, and it has been estimated that about one-third of the whole surface is covered with fresh water. The largest lake is Grand Lake, 56 m. long, 192 sq. m.; other large lakes are Red Indian Lake (64 sq. m.), Gander Lake (33 sq. m.), Deer Lake (24 sq. m.). These lakes and their fertile valleys are solitudes, till recently almost unknown to exist. The 'barrens' occupy the tops of hills. The coast-line is everywhere deeply indented with bays and estuaries, many of which are spacious enough to contain the whole British navy. Of these inlets, the principal, beginning from the n. extremity of the island, are Hare, White, Notre Dame, Bonavista, Trinity, Conception, St. Mary's, Placentia, Fortune, St. George's, and St. John's bays. These bays vary in length from 25 to 70 m., are of great breadth, and are lined—as, indeed, the whole coast is—with excellent harbors. The rivers, none navigable for any distance, communicate between the lakes of the interior and the shore, and are narrow and winding. The main streams are the Exploits, with its affluent the Great Rattling, and the Humber; the Exploits is 200 m. long, with a fertile valley suitable for agriculture, draining 3,000 or 4,000 sq. m., and flowing n.e. into Notre Dame Bay. The Humber flows into Deer Lake, and thence w. into the Bay of Islands. Much of the soil is sterile and unproductive, though there is considerable cultivation along the seaboard of the settled districts, limited principally to the s.e. coast. Recent exploration has shown that the best land and the best timber are in the interior. The great body of the people being employed either in the fisheries or in establishments connected with them, little attention used to be given to the culture of the soil; but great improvements in this respect have

latterly been made. In 1845 the only crops raised were oats and hay; but within recent years large supplies of grain, vegetable, and garden seeds have been imported; and now about 600,000 bushels of potatoes are produced annually, and turnips, hay, carrots, clover, barley, and oats are cultivated with success. It is now evident that N. is capable of sustaining a large agricultural population. The island possesses minerals, among which are marble, limestone, gypsum, roofing-slate, and coal—the last known to exist in several places on the w. side; also copper, nickel, lead, and iron. The copper mines of Notre Dame Bay and the iron mines of Bell Island, Conception Bay are of remarkable rickness; in 1904 the exports of iron ore were valued at $860,390, and of copper ore at $415,035. Geologically, the middle, e., and s. portions of N. are of Silurian, Huronian, and Laurentian formations. The climate is very healthful, cooler in summer and less extreme in its winter cold than the mainland nearest. The winter begins with Dec., and ends about the middle of April. Fogs are not frequent, except in the bays and on the shores of the s.e. and s.; there are no tornadoes and few thunder-storms.

The fisheries are of two kinds—the 'Shore Fishery' and the 'Bank Fishery': the former comprises the shores and bays of N.; the latter comprises a great tract known as the 'Banks' of N., or the Great Bank, 500 to 600 m. in length, and about 200 m. in breadth. The Banks form the greatest submarine plateau known; the depth of the water is from 20 to 108 fathoms, and the most productive 'ground' is said to be lat. 42°—46° n. Great variety of valuable fish is found in the waters around the colony, e.g., cod, salmon, herring, etc. The Gulf stream and the Arctic current meet at the banks, depositing earthly materials and bearing the many species of small sea plants and animals which are the food of mollusks and other invertebrates. These, in turn, supply food for the cod and other fish, on which depends the prosperity of the island. The total value of fishery production in 1905 was $9.974,275; the cod fishery is the largest item of the islands production amounting to $7,193,063; next come the seal fishery with a production valued at $754,235 and canned lobsters to the value of about $500,000. The cod fishery in extent of area and in production is the largest in the world. The revenue of the island is mainly derived from customs and considerably exceeds the expenditures. In 1904-5 the imports were $10,279,293; exports $10,669,342; revenue $2,574,069. The imports are mainly from Canada, United States and Great Britain, being valued in 1905 at $4,105,569, $2,750,114, and $2,654,908 respectively. The public debt (which includes the municipal debt of Saint Johns) is $22,745,809, chiefly incurred for railways and public works.

The seal affords one of the most important fishing interests of Newfoundland. This industry may commence

any day from Feb. 25 to Mar. 5, according to the winds —a n.e. wind blocking up the coast with ice, which the first strong w. wind clears away. At the beginning of the 19th c., the seal-fishing was carried on with vessels of 30 to 40 tons, manned by 8 or 10 men. Vessels of 70 to 180 tons, manned by 25 to 90 men, were substituted for these, the most suitable being vessels of 120 to 140 tons. About 1866, steamers were introduced into the seal-fishing, and they have proved very serviceable. Total value of exports of sealskins annually is about $162,000; of seal oil $432,000.

In proportion to the population of N., its religious institutions are ample, while education is within reach of all classes. About two-fifths of the pop. are adherents of the Chh. of Rome; nearly two-fifths of the Chh. of England; nearly one-fifth are Wesleyans; and Presbyterians, Congregationalists, Baptists, etc., make up the small remainder.

The railway was commenced in 1881, and has been extended from St. John's, across the island to Port aux Basques, in the s.w. part of the island. There are few roads across the island; they are confined chiefly to the s.e. and s.w. seaboard. Indeed, the interior is mostly uninhabited. There is weekly communication for nine months in the year between N. and Europe. In the colony and connected with it 2,079 m. of lines of telegraph have been constructed, and the Atlantic telegraph has its w. terminus in the harbor of Heart's Content.

The early history of N. is involved in obscurity. The island was discovered 1497, June 24, in the reign of Henry VII., by John Cabot; and the event is noticed by the following entry in the accounts of the privy-purse expenditure: '1497, Aug. 10. To hym that found the New Isle, £10.' It was visited by the Portuguese navigator, Gaspar de Cortereal, 1500; and within two years after that time, regular fisheries had been established on its shores by the Portuguese, Biscayans, and French. In 1578, 400 vessels, of which 50 were English, were engaged in the fishery. Sir Humphrey Gilbert, with his ill-fated expedition, arrived in St. John's harbor 1583, Aug., and formally took possession of the island in the name of Queen Elizabeth. In the return voyage, the expedition was scattered by a storm, and the commander lost. In 1621, Sir George Calvert (afterward Lord Baltimore) settled in the great peninsula in the s.e., and named it the *Province of Avalon*. The history of the island during the 17th and part of the 18th c. is little more than a record of rivalries and feuds between the English and French fishermen; but by the treaty of Utrecht (1713), the island was ceded wholly to England—the French, however, retaining the privilege of fishing and drying their fish on certain portions of the coast. France retains also—sole remnant of her former vast possessions

in N. Amer.—the small islands of Miquelon and St. Pierre, about 90 sq. m. off the s. coast. A gov. of N. was appointed 1728. The present form of govt., established 1855, consists of the gov., a legislative council (appointed by the crown), and a general assembly (elected by the people every four years, on house-tenancy suffrage). The coast of Labrador on the mainland, and the island of Anticosti, have been included, since 1809, within the jurisdiction of the gov. of Newfoundland. In 1887 the legislature sent to the imperial govt. a grievance relating to the fisheries and the encroachment upon them by French subjects. A bill dealing with the matter was introduced in parliament, but was disallowed by the house of commons. Diplomatic action followed; but the relations between Great Britain and France prevented results satisfactory to the colony. An act forbidding sale of bait to French fishermen, who, being bounty-aided, were able to undersell the colonists in foreign markets, was the principal subject of contention. The bill was adopted, vetoed by the imperial authorities, and finally allowed on earnest petition of the colony. Within two years the fish product of N. increased 20 per, cent. through the operations of this bait law. In 1889 the British and French govts. entered into a temporary *modus vivendi*, to which the colony of N. was greatly opposed; and a delegation was sent (1891) to the British house of lords to protest against legislation for its enforcement. In 1904 the Anglo-French convention was effected by which France renounced her claims under the treaty of Utrecht, but retained the right to fish in territorial waters from St. John's Cape northwards to Cape Ray. In 1905 compensation was awarded French ship-owners, fishermen, etc., amounting to $273,000 for relinquishing their privileges along the French shore. A treaty was also arranged with the U. S. removing the regulations against American fishing boats procuring bait in N. F. waters. In 1906 this occasioned some friction among the fishing population and diplomatic exchanges between the govts.

NEWFOUNDLAND DOG: one of the most sagacious and esteemed of the large kinds of dog; said to have been originally derived from Newfoundland, where it is used chiefly as a beast of draught, to draw light loads of wood or provisions, on sledges, over rugged tracks. Multitudes of these dogs, in St. John's and elsewhere, are left to shift for themselves during the fishing season; and are again called to service when required by their masters. There are several varieties of N. D., particularly a smooth breed, with rather small head, white and spotted with black, which seems now extinct; a very large breed, with broad muzzle, head raised, noble expression, waved or curly hair, very thick and bushy curled tail, black and white color; and a smaller, almost black, breed. Some of the breeds seem crossed with hounds and other dogs. The N. D. is remarkable for memory, and for patience and forbearance. It is, however, apt to become irascible

in confinement, and will then bite even its master. Some of the most interesting anecdotes of the affection and sagacity of the dog relate to the N. D. No dog excels it as a water-dog. Its paws are half-webbed. Its power of endurance in swimming is very great.

NEWGATE, *nū'gāt:* famous London prison at the w. extremity of Newgate street, opposite the Old Bailey. The exterior presented high, dark stone walls, without windows. It was long the chief criminal prison of city and county; but when no longer used for prisoners tried at the central court, it fell in the hands of the court of aldermen. The earliest prison here was in the portal of the *new gate* of the city, as early as 1218; hence the name. About two centuries afterward it was rebuilt by the executors of Sir Richard Whittington, whose statue with a cat stood in a niche, till its destruction by the great fire of London, 1666. Shortly after it was reconstructed; from which time, till 1780, the date of the erection of the present edifice, its condition was, in a sanitary view, horrible. Mr. Akerman, one of the keepers, in his evidence before the house of commons, 1770, stated, as a proof of this, that in the spring of 1750 the jail distemper, spreading to the adjoining Sessions House, caused the death of 'two of the judges, the lord mayor, and several of the jury and others, to the number of 60 persons and upwards.' After the reconstruction it was kept in the cleanest possible condition. The cells for condemned prisoners were at the n.e. corner, next to Newgate street. The *Newgate Calendar* contains biographical notices of the most notorious murderers, burglars, thieves, and forgers who have been confined within its walls. The prison was torn down in 1902.

NEW GRANADA, *nū grâ-nâ'dâ:* name under which the n.w. part of S. America was ruled by Spain, through a president, or later a viceroy, from the middle of the 16th to early in the 19th c. It embraced the immense region which is now Colombia, Venezuela, and Ecuador. The earliest rule was that of two Spanish adventurers, over two territories. These were united 1514, and later made a presidency of New Granada. This was put under a viceroy 1718, for a year, and again permanently 1740. Revolt against Spanish rule began 1811, and lasted to 1824. Bolivar formed in 1819 the Republic of Colombia of the whole region, but from this Venezuela withdrew 1829, and Ecuador 1830, and the remaining part became, 1831, the Republic of New Granada, which became, 1861, the United States of Colombia. See COLOMBIA, UNITED STATES OF.

NEW GUINEA, *nū ghĭn'ē:* larges island in the world (excluding Australia). See PAPUA.

NEW HAMPSHIRE, *nū hămp'shĕr:* state; one of the United States; 9th of the original 13 to ratify the U. S. constitution; one of the six New England states; now (1910) 37th in pop.

Location and Area.—N. H. is in lat. 42° 40′—45° 18′ 23″ n., long. 70° 37′—72° 37′ w.; bounded e. by Me. and the Atlantic, s. by Mass., w. by Vt., with the Connecticut river as its w. edge, and at the extreme n.w. and on the n. by Canada. Its full length n. and s. is 180 m., its width 90 m. at the s. end (or 100, embracing the 4 islands, of the 9 Isles of Shoals, which are part of N. H.), narrowing to 20 m. at the n. end; area by the state geologist's estimate (1880) 9,336 sq. m.; average elevation 1,200 ft.

Topography.—N. H. touches the Atlantic by a coast of 18 m. only, between the s. end of the coast of Me. midway of the mouth of the Piscataqua, and the n. end of the coast of Mass. at a point 2½ m. n. of the mouth of the Merrimac river. From this last point the boundary runs parallel to the Merrimac, 2½ m. from it, until it cuts the line of 42° 40′ n. lat., when it follows that line w. to the Connecticut river, and thence n. up that river to the mouth of Hall's stream, on the w. of the upper Connecticut, and up Hall's stream to the watershed ridge separating the head-waters of the Connecticut from the sources of streams that flow to the St. Lawrence, and follows the eastward curve and irregular course of this ridge across to the e. border of the state. This border ascends from the mouth of the Piscataqua to the confluence with it of the Salmon Falls river, then follows that river w. of n. to its source, and thence takes the direction of a straight line toward Quebec, bearing a very little w. of n. Parallel to the long valley of the Connecticut river is a notable mountain ridge which comes up through Conn. and Mass., and enters the s. end of N. H., running n. and a little e. of n., with an average height of 1,500 ft. for 80 m., then for 40 m. reaching, in the main line of the White Mountains, an average of 4,000 ft., after which the ridge goes to the n. limit of the state, with an average height of 2,000 ft. The peaks of the southern 80 m. of the ridge are: Monadnock 3,186 ft., Sunapee 2,683, Smart's 2,500, Cuba 2,927, and Piermont 2,500. In the central section of the ridge, the peaks are: Moosilauke 4,811 ft., Blue 4,370, Kinsman 4,200, Lafayette 5,259, Haystack 4,500, Twins 4,920, Field 4,070, Webster 4,000, Jackson 4,100, Clinton 4,320, Pleasant 4,764, Franklin 4,904, Monroe 5,384, Washington 6,293, Clay 5,553, Jefferson 5,714, Adams 5,794, Madison 5,365. The gaps in this part of the ridge are: the Woodstock notch 1,655 ft. above sea-level, Franconia notch 2,014, Pinkham notch 2,018, White Mountain notch 1,914, Dixville notch 1,831. The peaks of the last section to the n. are: Randolph 3,043 ft., one in Erving's Location 3,156, Pisgah 2,897, Carmel 3,711, and the highest peak of the boundary ridge on the n. 2,917. The lowest gaps found anywhere along the whole line of the ridge are: at the Orange summit of the Northern railroad 990 ft., at the

Warren summit of the Boston Concord and Montreal railroad 1,063 ft., at the Milan summit of the Grand Trunk railroad 1,087 ft., at the Newbury summit of the Concord and Claremont railroad 1,161 ft., and at the summits in Harrisville and Stoddard. E. of the lower and southern section of the great ridge, and s. of the White Mountains, there are a few peaks, as: Kearsarge 2,943 ft., Gunstock 2,394, Crotched 2,066, Great Moose 1,404, and Cropple Crown 2,100; but otherwise this part of the state is not over 600 ft. above sea-level, and its 18 m. of seacoast show for the most part only salt marshes and a sandy beach. The chief streams of the N. H. side of the Connecticut river-basin, flowing from the backbone ridge into that river, are: the Ashuelot in the s.w., the Sugar and the Mascoma higher up, the Lower Ammonoosuc from the White Mountains, and the Upper Ammonoosuc beyond the mountains (a separate stream). The drainage of the middle of the state, from the White Mountains s., is by the Pemigewasset river from the heart of the mountains, into which Baker's river falls on the w., at Plymouth, and which becomes the Merrimac at Franklin, where the Winnipiseogee river brings into it the waters of Lake Winnipiseogee. The Merrimac flows s. into Mass., past Concord, Manchester, and Nashua, in N. H., with five important tributaries on the w. and two on the east. On the e. side of the s. end of the state, the Piscataqua has a short course from the union, forming it, of the Salmon Falls and Cocheco rivers. The tide enters through it to an inland tidal basin of about 9 sq. m., from which the ebb is so strong as to keep open a very deep channel, never known to freeze over, on which Portsmouth, 3 m. from the sea, is built, with a harbor equal to receiving 2,000 ships, and water deep enough for the largest class at low tide. Passing n., the e. boundary crosses several streams flowing from the N. H. mountains into Me.—the Ossipee, the Saco, the Androscoggin, and higher up Lake Umbagog, a feeder of this river, and the upper course of the river, where it enters from Me., for a long circuit through the e. edge of N. H. The head-waters of the Saco, in the White Mountains, cut their way through a remarkable chasm 2 m. long and but 22 ft. wide in the narrowest place. The streams of N. H. number nearly 1,500, and with the large and small lakes cover about one-sixteenth of the state. Lake Winnipiseogee has an area of 72 sq. m., contains 267 islands, and shows a great variety of beautiful bays and shores. Other lakes are Sunapee, Mascoma, New Found, Squam, Ossipee, Umbagog, and four in the extreme n. which are the head-waters of the Connecticut river, besides very many smaller ones in all parts of the state. The broad hills, bold mountains, and beautiful lakes of N. H. are an attraction hardly second to any in the U. S., and convenient of access from New York and Boston, while the volume of the streams, with notable falls in the larger ones, gives water-power for manufacturing scarcely excelled anywhere.

Area in Square Miles, 9,305.
Number of Counties, 10.
Population 431,588.
Capital of State, Concord.
NEW HAMPSHIRE
QUEBEC
VERMONT
MAINE
SCALE OF MILES
0 5 10 20 30 40
A 72° 30′ B 72° C 71° 30′ D 71° E
A 72 30′ B Longitude 72° West C from 71° 30′ Greenwich D 71° E
MASS.
ATLANTIC OCEAN
WHITE MTS.
Pittsburg
Clarksville
Connecticut L.
Second L.
Parmachenee L.
Kennebago L.
Rangeley L.
Mooselookmaguntic L.
Molechunkemunk L.
Richardson L.
Umbagog L.
Bemis
Stewardstown
W. Stewardstown
Colebrook
Mohawk
Dixville Notch
Dixville
Wentworth Location
Columbia
Island Pond
Willoughby L.
Coos
Stratford
Percy Pks
Dummer
Errol
Lakeside
Percy
Stark
W. Milan
Milan
Groveton
Northumberland
Pilot Ridge
Lancaster
Lyndon
Morristown
Lamoille R.
Danville
St. Johnsbury
Dalton Sta.
Riverton
Berlin
Berlin Mills
Jefferson
Scott
Randolph
Gorham
Androscoggin R.
Gilead
Whitefield
Hazen Jc.
Quebec Jc.
Wing Road
Littleton
Twin Mts
Bethlehem
Franconia
Mt. Washington
Mt. Adams
Mt. Madison
Mt. Jefferson
Fabyan Ho.
Mt. Monroe
Crawford Ho.
Jackson
Chatham
N. Chatham
Upper Kezar Pond
Bemis Glen
Intervale
N. Conway
Bartlett
Livermore
Lincoln
Redstone
Conway
Center Conway
Walker Pd.
Kezar Pd.
Bridgeton
Waterville
Chocorua Pk.
Chocorua Pd.
Tamworth
Madison
Silver Lake
Hiram
Freedom
Ossipee L.
Gt. Ossippe R.
Effingham
Waterbury
MONTPELIER
Barre
Northfield
Williamstown
Wells River
Woodsville
N. Haverhill
Newbury
Haverhill
E. Haverhill
Barnet
Monroe
Lyman
Sugarhill
Lisbon
Bath
Profile Ho.
Flume Ho.
Moosilauk Mt.
Woodstock
N. Woodstock
Warren Summit
Warren
Piermont
Orford
Orfordville
Thornton
W. Thornton
Campton Vill.
Lyme
W. Rumney
Rumney
Quincy
Lyme Cen.
Cheevor
N. Groton
Plymouth
Holderness
N. Sandwich
S. Tamworth
Sandwich
Squam L.
Moultonville
Melvin Vil.
Tuftonboro
Ossippee
Wolfboro
Wakefield
Randolph
Bethel
Hanover
Hanover Cen.
Etna
Hebron
Woodstock
Hartford
Lebanon
W. Lebanon
Enfield
Enfield Cen.
Canaan
Canaan Cen.
W. Canaan
Newfound L.
Mt. Cardigan
Bridgewater
Center Harbor
Lake Winnepesaukee
Meredith
The Weirs
New Hampton
Bristol
Plainfield
Meriden
E. Grafton
Danbury
Hill
Sanbornton
Lakeport
Laconia
W. Alton
S. Wolfboro
Sanbornville
Union
Gt. East Pd.
Mousam Pd.
Milton Mills
Windsor
Springfield
Cornish Flat
Cornish
Croydon
New London
Wilmot
Potterplace
E. Andover
Tilton
Winnisquam
Belmont
Gilmanton
Gilmanton Iron Works
Middleton
Milton
New Durham
Farmington
E. Rochester
Rochester
Somersworth
Salmon Falls
Rollinsford
Dover
Dover Point
Claremont
N. Newport
Newport
Sunapee
Sunapee L.
Kearsarge
Elkins
Franklin
Franklin Falls
Salisbury
E. Canterbury
Canterbury Sta.
Barnstead
Cen. Barnstead
N. Charlestown
Unity
Guild
Mt. Sunapee
Sutton
S. Newbury
Boscawen
Penacook
Pittsfield
N. Strafford
Barrington
Gonic
Mill Vill.
Newbury
Warner
Charlestown
Bradford
Contoocook
Hopkinton
E. Concord
Chichester
Epsom
Strafford
E. Barrington
S. Londonderry
Rockingham
S. Acworth
E. Lempster
Henniker
W. Henniker
CONCORD
Gossville
Pembroke
Northwood
Deerfield Cen.
Lee
Washington
Alstead
Hillsboro Cen.
N. Weare
Suncook
Hooksett
Nottingham
Walpole
Drewsville
Marlow
Hillsboro
Hillsboro Bridge
E. Weare
Weare
Candia Vil.
Candia
Raymond
Newmarket
Portsmouth
Rye
Gilsum
Sullivan
Bennington
E. Deering
Goffstown
Amoskeag
W. Epping
Epping
Stratham
Newfields
Fremont
Exeter
Westmoreland Depot
Munsonville
Francestown
Grasmere
Massabesic
E. Westmoreland
E. Sullivan
Hancock
New Boston
Bedford
Manchester
Chester
Brentwood
Kensington
Hampton
Hampton Falls
Parkhill
Keene
Greenfield
Londonderry Sta.
Derry
E. Derry
Danville
Seabrook
S. Seabrook
Spofford
Marlboro
Harrisville
Dublin
Petersboro
W. Petersboro
Lyndeboro
S. Lyndeboro
Reeds Fy.
Derry Depot
Newton Jc.
Hampstead
Newton
Brattleboro
Chesterfield
Swanzey
E. Swanzey
Monadnock Mt.
W. Wilton
Wilton
Merrimack
Thornton Fy.
Windham Depot
N. Salem
Westport
W. Swanzey
Troy
Jaffrey
Milford
Canobie Lake
Salem
Newburyport
Winchester
Fitzwilliam
E. Jaffrey
Greenville
Ponemah
Salem Depot
Plum I.
Richmond
W. Ringe
Ringe
New Ipswich
Nashua
Pelham
Haverhill
Hinsdale
Fitzwilliam Depot
E. Ringe
Hollis
Brookline
Hudson
Merrimac R.
Lawrence
S. Vernon Jc.
Connecticut R.
Merrimac R.
Ottauquechee R.
Black R.
Williams R.
Cold R.
Sugar R.
Contoocook R.
Smiths R.
Saco R.
Salmon Falls R.
Mad R.
Swift R.
Baker R.
Passumpsic R.
Wells R.
Waits R.
Moose R.
Halls Stream
Indian Str.
Magalloway R.
Great Bay
Winnepesaukee

NEW HAMPSHIRE.

Climate.—The air of N. H. is pure and healthful. The winters are severe, and on the hills especially the cold is excessive; while snow covers the ground, often to a great depth, and all the rivers and lakes are ice-bound. The valleys suffer least from the cold, that of the Merrimac being the warmest part of the state. The heat of summer reaches to from 90° to 100° on a few days, but is much broken by cool winds and chilly rains. The rainfall in the mountains has been found 55 inches for a year, to 46 inches for the greatest elsewhere in the state (at New Found Lake), 35 inches near the sea-coast, and 40 inches in the extreme n.

Geology.—The various groups of rocks, nearly all crystalline, fall under the three varieties of eozoic: (1) Laurentian, (2) Montalban, (3) Huronian, with some indeterminate groups and a paleozoic series—all together aggregating a thickness of 75,000 ft. The rocks everywhere show indications of the action of ice, in scarification of their exposed surfaces, the transport of bowlders, formation of terraces along the rivers when the water stood 200 ft. higher than now, and moraines left by local glaciers. The minerals which have been mined to some extent are gold, silver, copper, iron, zinc, lead, arsenic, tin, bismuth, manganese, and molybdenum, but nothing extensive has been done with any metallic ores. The granite of the state is peculiarly valuable. It is very fine-grained, of light-gray color, and is much used for monuments and in building. There are 40 extensive quarries in the state. Soapstone or steatite is largely obtained, in slabs, for stoves, fireplaces, sinks, set tubs, rollers, etc. Slate, limestone, clays for brick, quartz and felspar, mica and tourmalines, plumbago or graphite, colored porphyries, and beryls of rare size and value are among the minerals. The soil of N. H. is good in the valleys, and good enough on many of the lower hills to be made productive by skilled industry. The n. part is chiefly pasture and woodland, with very small areas of tillage. Originally dense forest clothed nearly all the land, and trees still cover, though of later growth, about one-quarter of the state. Four areas of growth and of animals are noted: (1) that of the s. end, where the hickory, chestnut, mountain laurel, wild grape, and cranberry occur, with such animals as the blue-jay, bobolink, red-headed woodpecker, Baltimore oriole, humming-bird, the box and painted turtles, and the rattlesnake; (2) that of heights above 600 and below 4,000 ft., and extending to the n. limit of the state, the trees and animals being Canadian, as spruce, balsam fir, canoe birch, and bush maple, with the Canada lynx, caribou, snowbird, crossbill, spruce partridge, Canada jay, and rose-breasted grosbeak; (3) that of the sides of the White Mountains, above the 4,000 and up to the 5,000 ft. limit, in which the dwarfed spruces of the Hudson's Bay region are found, and both a butterfly and a grasshopper peculiar to that region are plentifully distributed; and (4) that of the mountain-tops above 5,000 ft., where a Labrador butter

fly is abundant, and 53 species of plants, of subalpine and alpine character, which are either of Labrador or Hudson's Bay region in their relations, left here in the tops of the mountains when the arctic climate of a remote ice age retreated to the present arctic limits. Through N. H. generally the trees of most value are the pines—white, red, and pitch, which grew in the original forests from 200 to 270 ft. high, spruces, hemlock, larch, beech, birch, red and sugar maples, chestnut, red and white oaks, elm, hickory, poplar, and cherry. Game, wild fowl, and fish are abundant throughout the state. Attention to fish culture since 1865 has developed remarkable results, many streams and lakes having been well stocked with fine varieties. More than a hundred streams were stocked 1872–80 with black bass, brook-trout were widely distributed, and both Atlantic and land-locked salmon were planted in the Pemigewasset river. At Plymouth and at Sunapee Lake, fish-hatching houses have been very successful, producing and distributing very great numbers of valuable varieties of fish—salmon, trout, whitefish, shad, etc. In 1876 were planted 1,725,000 young fish of these varieties, and from that date the stocking of lakes and streams has gone on with most satisfactory results. The Plymouth station alone sent out 1885 nearly 3,000,000 young fish. At Lake Sunapee six species of *salmonidæ* are abundant: (1) native brook-trout, (2) land-locked salmon, (3) rainbow-trout from the Sierra Nevada, (4) blue-backed trout of Maine, (5) Loch Leven trout from Scotland; (6) a

Agriculture.—At one time the chief industry, agriculture has now been forced to take second place to manufacturing in the state. However, the soil along the sea coast and river valleys is fertile, although the upland farms require careful treatment to render them fairly productive. There are altogether about 29,350 farms, comprising about 3,610,000 acres, of which approximately one-third is improved land. The total value of farm property is estimated at $90,000,000. Cereals and crops requiring large areas have given way to the more intensive forms, such as dairying, fruit growing, market gardening, poultry raising, etc. A board of agriculture, established in 1820; a board of cattle commissioners, established in 1891; and an extensive and influential state section of the Patrons of Husbandry, introduced in 1873, together with minor boards under their supervision, are directing, co-operating, and stimulating forces of much power in the field of agriculture in the State.

Manufactures.—The excellent water-power privileges upon the numerous streams of the state early became a controlling factor in the permanent location and development of manufacturing industries. Since 1850 the manufacturing progress has been striking, especially in view of the slow growth of the population. Altogether there are at present almost 6,000 manufac-

STATE CAPITOL AT CONCORD.

turing establishments, with aggregate annual products estimated at nearly $200,000,000. The principal industries are boots and shoes; cotton goods—the Amoskeag corporation, a national leader in this industry being located in N. H.; woolen goods, lumber and timber products—the mills of Berlin and Lincoln ranking among the most extensive and best equipped in the U. S.; wood pulp; hosiery, and knit goods; and foundry and machine-shop products.

Finance and Banking.—The total assessed valuation of all property in the state is $255,085,571, and the bonded debt $1,071,700. The tax rate for all purposes (state, county, town, and school) is $20.58 per $1,000. The banking system dates back to 1792, when the first bank was opened at Portsmouth. There are now about 60 national banks, almost as many savings banks, about 10 banking and trust companies, almost twice as many building and loan associations, and scarcely any State banks. The supervision of State banks is committed to a board of three commissioners, this office having been established in 1837.

Railroads.—The first railroad was chartered in 1835, since which time the trackage has increased until it now measures a total of about 1,300 miles. The principal lines are the Boston & Maine and the Maine Central. There are also about 10 street railways, operating approximately 150 miles.

Education.—The state spends about $1,500,000 a year in the maintenance of its public schools, in which there are over 65,000 pupils enrolled, with over 3,000 teachers. The State Normal School is located at Plymouth, having been established in 1870. There are numerous academies and seminaries. Among the private academies providing preparatory courses for college St. Paul's School, at Concord, and the Phillips Exeter Academy, at Exeter, enjoy national repute. There are a few institutions of higher education, the most prominent being Dartmouth College.

Religion.—The strongest denominations in the state are the Roman Catholic, Methodist, Congregational, Baptist, and Presbyterian.

Charities and Corrections.—The N. H. Asylum for the Insane, founded at Concord in 1838, is supported by occasional state aid, the income of invested funds, and the sums paid by individuals for the care of patients. Each county also has its own insane asylum and almshouse. The State Board of Health is also a commission of lunacy. The N. H. Orphans' Home was established at Franklin in 1871. It is undenominational and is supported by voluntary contributions. The state prison at Concord was established in 1812. There is also an industrial school at Manchester and a school for the feeble-minded at Laconia. A considerable number of hospitals, orphanages, etc., have been opened at populous centres by the Roman Catholic Church, under whose direction they continue to be directed. There are

besides many other private and denominational charities throughout the state.

Public Libraries.—N. H. has been a pioneer in and sturdy supporter of the library movement. During the period from 1792 to 1883 no less than 220 libraries received special charters from the legislature. These were for the most part private library corporations which have now given place to, or become merged with public libraries. The first free public library in the United States was established in the state, being located at Peterborough in 1833. The state was also the first, in 1849, to pass a law authorizing towns to aid in establishing and maintaining libraries. This was followed logically by the second and third steps in the progress, namely, by the law of 1891 granting State aid to town libraries, and by the compulsory law of 1895 requiring every town to appropriate a certain proportion of its taxes for the support of a town library. The first legislative incorporation of a state library association was by N. H. in 1889.

History.—Capt. John Smith visited the Piscataqua river and the coast in the vicinity 1614. In 1622 a grant of the terr. back from the coast 60 m., and between the Kennebec and Merrimac rivers, was made to Sir Ferdinando Gorges (q.v.) and Capt. John Mason (q.v.), to be the province of Maine, and the first settlement w. of the Piscataqua was made in the spring of 1623. Gorges and Mason later divided their province, Mason taking from the Piscataqua to the Merrimac, and calling it New Hampshire. A grant confirmed his rights 1629, and he sent over colonists supplied with mills, houses, and cattle, for a strong plantation. Rye, Portsmouth, and Dover were settled (the first as Little Harbor, and the second as Strawberry Bank). The death of Mason, 1635, enfeebled the colony; and as its members were Episc. of the Church of England, the Puritans of Massachusetts Bay were not slow to press upon them, and so far got control as to bring N. H. under Massachusetts 1641, the plea being that nearly all of N. H. belonged to Massachusetts by her charter. The colony was thus lost to Mason's estate; but 40 years later his heirs in England secured the overthrow of the intruding interest and the setting up of a royal province. An order of the king's govt. 1677 limited Massachusetts to within 3 m. n. of the Merrimac, and 1679 a royal commission set up a govt. of N. H., the king appointing its pres. and council, and the people electing an assembly. A new govt. was set up 1692, which lasted until 1774. The exposed situation of N. H. caused repeated and terrible suffering from hostile Indians for 75 years (1675–1750). The bounds of the province on the s. and e. were fixed by royal authority 1740, and on the w. 1764, until which date the terr. beyond the Connecticut river, now Vermont, was a part of N. H. It was disputed between New York and N. H. which the transferred region belonged, until 1790, the matter was settled by making it the

state of Vermont. Although N. H. had been settled by royalists and churchmen, and had escaped from Massachusetts control, its part in the revolution was early and active. Her patriots captured the fort at New Castle 1774, Dec., gave a vigorous support to the war, adopted a state constitution 1784, June 2, ratified the U. S. constitution 1788, and framed a new state constitution 1791, Sep. 7—1792, Sep.—N. H. had 12,497 soldiers in the revolution, more than 2,000 in the war of 1812, and in the civil war 32,750, or about one in ten of the population.

Government.—The state administration consists of a gov. elected by the people, or, in case of failure to elect, chosen by the legislature from the two candidates having the most votes; a state or gov.'s council of five, and three railroad commissioners; a sec. of state, treas., commissary-gen., and state printer, elected by the legislature in joint convention; and an atty.gen., adjt.gen., insurance commissioner, two bank commissioners, supt. of public instruction, boards of health, of agriculture, and of tax equalization, a state librarian, and an editor and compiler of state papers, appointed by the gov. and council. The new constitution, which came into force as to elections, 1878, Oct. 1 (as to other matters 1879, June), made elections biennial, on the Tuesday after the first Monday in Nov., and the terms of service of the elected state officers and the legislature two years; the sessions of the legislature to be held biennially in the odd years, to open the first Wednesday in June. By an amendment adopted by popular vote 1889, Mar. 12, the terms of legislative and executive officers begin from Jan. instead of June, and the legislature meets the first Wednesday in Jan. instead of the first Wednesday in June. By the new constitution, the senate has 24 members elected from 24 districts, into which the state is divided; and the basis on which the house is chosen gives (1888) 313 members. A property qualification for representatives, required by the constitution of 1792, was removed by an amendment which the people adopted 1851. All judicial officers, judges, county solicitors, sheriffs, coroners, and registers of probate are appointed by the gov. and council; but county commissioners and treasurers, and registers of deeds, are elected by the people. A new judiciary system, which came into effect 1874, Aug., provided for a superior court, composed of a chief-justice and two associate justices, and a circuit court, also composed of a chief-justice and two associates. Below these are probate and police courts, and justices of the peace. Two trial terms, at least, of the circuit court, are held annually in each co., and two annual law terms of the superior court, at Concord, beginning on the first Tuesdays in June and December. In 1906 there were 600 post-offices of all grades.

The United States Courts.—The federal, circuit, and district courts are held at Portsmouth, Concord, and

Littleton (pop. 4,066). The district judge resides at Littleton and the residence and office of the clerk of these courts is at Concord.

The governors have been the following: Josiah Bartlett 1792–94; John Taylor Gilman 1794–1805; John Langdon 1805–09; Jeremiah Smith 1809–10; John Langdon 1810–12; William Plumer 1812–3; John Taylor Gilman 1813–16; William Plumer 1816–19; Samuel Bell 1819–23; Levi Woodbury 1823–4; David L. Morrill 1824–27; Benjamin Pierce 1827–29; John Bell 1829–30; Matthew Harvey 1830-1; Jos. M. Harper (acting) 1831; Samuel Dinsmoor 1831–34; William Badger 1834–36; Isaac Hill 1836–39; John Page 1839–42; Henry Hubbard 1842–44; John H. Steele 1844–46; Anthony Colby 1846–7; Jared W. Williams 1847–49; Samuel Dinsmoor 1849–52; Noah Martin 1852–54; Nathaniel B. Baker 1854–5; Ralph Metcalf 1855–57; William Haile 1857–59; Ichabod Goodwin 1859–61; Nathaniel S. Berry 1861–63; Joseph A. Gilmore 1863–65; Frederic Smyth 1865-67; Walter Harriman 1867-69; Onslow Stearns 1869-71; James A. Weston 1871–2; Ezekiel Straw 1872–74; James A. Weston 1874–5; Person C. Cheney 1875–77; Benj. F. Prescott 1877–79; Natt Head 1879–81; Charles H. Bell 1881–83; Samuel W. Hale 1883–85; Moody Currier 1885–87; Charles H. Sawyer 1887–89; David H. Goodell 1889–91; Hiram A. Tuttle 1891–93; John B. Smith 1893–95; Charles A. Busiel 1895–97; George A. Ramsdell 1897–99; Frank W. Rollins, 1899–1901; Chester B. Jordan 1901–03; Nathum J. Bacheller, 1903–05.

Politics.—The suffrage is accorded to males 21 years of age, except paupers, persons voluntarily excused from taxation, and unnaturalized aliens. An educational test was imposed by the last amendment of the constitution. Women may vote in school meetings. The state election is biennial, on the even year, and occurs in November. The governor, council of five members, and the legislature, which consists of 24 senators and (1903) 393 representatives, assume office on the first Wednesday in January of the odd years. The number of senators is fixed at 24, while the membership of the house depends upon population. Concord became the seat of government in 1808, and the state house was erected there in 1819. The ancient New England town system still prevails except in the cities, and is regarded as preferable to the city form of government in municipalities even of very large population.

Population.—In 1900 New Hampshire stood 36th in respect to population, having a total of 411,588. Of these 323,481 were native born, and 88,107 foreign born. There were 12,924 aliens. The density is 45.7 to the square mile. There are 11 cities with population as follows: Berlin 8,886, Concord 19,632, Dover 13,209, Franklin 5,846, Keene 9,165, Laconia 8,042, Manchester

56,987, Nashua 23,898, Portsmouth 10,637, Rochester 8,466, Somersworth 7,023.

NEW HAMPSHIRE COLLEGE OF AGRICULTURE AND MECHANIC ARTS, opened in 1867, at Durham, N. H. The courses offered include the regular four years' courses in agriculture, mechanical and electrical engineering, technical chemistry, and general science, for completion of which the degree of B.S. is conferred; a two years' course in agriculture, and ten weeks' winter courses in agriculture and dairying. There is also a preparatory department; and the state experiment station is connected with the college. Women are admitted to all courses, but from a small proportion of the student body. The income of the college is derived from the Federal land grant of 1862 and from the Federal and state appropriations; in 1905 the total amounted to over $65,000; the students numbered over 130 and the faculty 27.

NEW HAN'OVER, an island of the Bismarck Archipelago, about 40 m. long and 20 m. broad, n.w. of New Ireland, or New Mecklenburg, from which it is separated by Byron Strait.

NEW HAR'MONY, Ind., town, in Posey co.; on the Wabash River, and on the Illinois Central railroad; about 25 m. in direct line n.w. of Evansville. The first settlement was made by a German community called Harmonists in 1815. In 1824 Robert Owen purchased the village and domain and the Harmonists returned to Pennsylvania. The next year Owen established a 'Preliminary Society' and issued a general invitation to all 'the industrious and well disposed of all nations' to join the new community, which was to be governed and conducted on new plans. All goods were to be held in common, but their use was regulated by age; 'moral lectures' were to replace religious worship; the young were to be educated by trained teachers, and this education was to begin when the children were two years of age. The whole experiment proved a failure; those who accepted the invitation were not all 'well disposed' and many were far from 'industrious.' In 1826 Owen assumed control of the community and established order; but in a few months dissentions arose, three communities were formed of the original one, and soon after the 'community idea' was abandoned. One of the leaders, William Maclure, purchased part of the land and established an industrial school which also was a failure. The free library of the Workingmen's Institute, established in 1838, is in a most flourishing condition and contains about 16,000 volumes. The town has some manufacturing establishments, chief of which are flour and lumber mills and brick works. Pop. (1890) 1,197; (1900) 1,341.

NEW HAVEN.

NEW HAVEN: town, city, port of entry, and cap. of New Haven co., Conn.; at the head of N. H. Bay, four m. from Long Island Sound, 73 m. e.n.e. of New York, 33 m. s. of Hartford; lat. 41° 18′ 23″ n., long. 72° 56′ 30″ w.; on the New York N. H. and Hartford Railroad, *via* Springfield to Boston, and the point of junction with this of the New York and New England, and the shore lines between New York and Boston; also a terminus of the N. H. and Northampton and the N. H. and Derby railroads; and with two steamboat lines, giving three boats daily to and from New York. The site of N. H., area of 10 sq. m., is an alluvial plain of sand or rich loam, limited on the n. by an abrupt range of trapdikes, the two highest points of which, known as East Rock and West Rock, mark the n.e. and n.w. corners of the plain, while at the middle on the n. a considerable tongue of wooded higher ground penetrates from the n. to near the centre of the city, and gives the elegant residence quarter of Whitney and Hillhouse avenues, and the old Tutors' lane, now beautifully improved. In remote geological times the Connecticut river entered Long Island Sound where N. H. now is, until the upheaval of the present range of trapdikes turned it off through the narrows at Middletown and by way of Saybrook to the Sound. The city proper is built on the area between West and Mill rivers; and on that e. of Mill river to the Quinnipiac river Fair Haven is built. Sheltered by its semicircle of hills to the n., and open to a great inland sea, within reach also of the influences of the Gulf Stream, N. H. has pure air, a mild climate, and conditions of health which have given it the lowest death-rate of any seaport of its size in the world. Its streets are beautifully planted with elms, in large part the work, early in the present century, of James Hillhouse, who sat in the U. S. senate 1796–1815, and was long one of the most notable men in New England. Ample room over a fair plain, all equally good to build on, has had the effect of preventing the crowding of residences thickly together, nearly all the better class having yard and lawn room, with gardens and shrubbery. The original settlers laid out a half-mile square of land into nine squares for building, reserving a central square of 16 acres for public uses, including sites for three of the churches and for a state house. This Green, with elms of a size and form rarely seen, is now the centre of the city, and one of the finest public squares in any city. There are a dozen other parks, half of them quite small; but Jocelyn has 2½ acres; Clinton, 3½; Wooster, 4½; the original grounds of Yale University, next w. of the Green, 9; Hamilton, 47½; and the magnificent new East Rock park, 353 acres, 362 ft. above tide-water, with a $50,000 soldiers' monument, commemorating a century of American valor, 1775–1865,

on the brow of the cliff, which gives one of the sightliest spots anywhere dedicated to this purpose.

The town and the city are two separate organizations, though now occupying practically the same limits, since the final extension of those of the city. The govt. of the town has continued from the earliest days to the present time by selectmen, not more than seven, who are annually elected, and with them grand jurors, constables, assessors, a town clerk, a board of relief, a register of births, a treasurer, a collector of taxes, etc. The city has a charter under which it is governed for municipal purposes, in 12 wards, by boards composed of two aldermen and three councilmen from each ward, elected for two years. A mayor, chosen for two years, is the municipal head, with the nomination in his hands of the principal administrative boards. The city dates from 1784, Jan. 21, 146 years after the first settlement, 1638, of the town. It was the first city in the United States to be incorporated after England had recognized American independence. The original settlement of the town was made by an English Puritan colony sent from London under Theophilus Eaton and the Rev. John Davenport, the commercial aims of which led to the choice of the site, 30 m. w. of the mouth of the Connecticut river, at the head of a fine harbor. The early name was Quinnipiack, and the first Sabbath was kept by Divine service under a great oak, 1638, Apr. 15. The name N. H. was decided on, 1640, Sep. 1. A state (colonial) was organized, and by 1843, Oct., the settlements of Stamford, Greenwich, Guilford, and Wilford, near by, and Southhold on the e. end of Long Island, had joined it, laying a foundation which in due course should have become the commonwealth of New Haven. A similar state organization had grown out of settlements a little earlier, 1635–6, along the Connecticut river, with the name Connecticut, promising a state of Connecticut, next e. of the state of New Haven with Rhode Island beyond, and Plymouth beyond Rhode Island, a chain of four small states lying s. of Mass. But just as the original New England state organization erected by the colony of Plymouth was suppressed by union of the territory with Mass., 1692, so was New Haven as an infant state suppressed by a royal charter extending Connecticut, 1662, May 10, which was submitted to 1665, Jan., after fruitless remonstrance. 1665–1701, the general court of Connecticut thus constituted, held its sessions at Hartford, and then for 117 years, 1701–1818, held its Oct. sessions at N. H., and its May sessions at Hartford. On a new constitution taking effect, 1819, the legislature met in the even years at Hartford, and in the odd at N. H., until 1874. Hartford finally became the sole capital.

The early building of N. H. was on lots convenient to the water, and the houses were 'fairer and more commodious than those of other colonies' (says Hutchinson). Vessels also were built, and trading posts attempted, and down to the ruinous war of 1812 shipping was a very

great interest, though disastrously checked by one revolution. That it has never ceased to be important is shown by the fact that among our seaports N. H. is seventh in order for the amount of duties on imports paid into the U. S. treasury. The U. S. govt. has deepened the harbor to 20 ft. at mean low water (more than 26 ft. at high water), and has constructed two long breakwaters at the mouth of the harbor, securing one of the finest harbors of refuge on the coast. It is claimed that at no point in New England can coal and materials for manufactures be delivered at rates lower than at New Haven.

No great industrial centre of the United States has a more remarkable variety of manufactures. The making of carriages employs 2,000 workmen and 39 factories, with an output of $2,000,000 annually. One of the largest hardware concerns in America employs here more than 1,800 men; and a score of smaller factories add 1,200 to the roll of workmen engaged in this trade. The Winchester Repeating Arms Co.—organized 1858, incorporated 1866, its present building, covering two squares, erected 1870—employs 1,500 men in skilled labor, operating 3,000 different machines. In the making of corsets a single factory employs more than 1,500 persons. The machine, iron, and steel work interest of N. H., embracing steam engines and boilers, and a long list of products, is immense and steadily growing. Other chief interests are brass goods, rubber goods, clocks, harness and saddlery, locks, pianos, lumber products, and oyster farming. According to the U. S. census of 1900 there were 1,236 manufactories, employing a capital of $30,463,066, annually paying out $10,016,571 to wage-earners, and yielding products of the value of $40,762,015. The headquarters and construction and repair shops of the New York, New Haven & Hartford Railroad are also located here. The financial interests of these vast and complex industries engage numerous national, state, saving and private banks, insurance, trust, building and loan companies occupying fine buildings. The extent to which N. H. is surrounded by thriving and wealthy towns and villages, and thickly settled agricultural country, adds greatly to its business. It is notable for the extent of its wholesale trade.

The debt of N. H. is slight; its property valuation, $50,340,850, and real value close upon $100,000,000. The streets of N. H. have an extent of 130 m., with over 20 m. of pavement, 15 m. of street railroads, and more than 100 m. of water-pipes, complete gas or electric lighting, and since 1871 a very effective sewerage system with over 35 m. of sewers. The water supply, since 1862, Jan., has been from Mill river, with a watershed of 56 sq. m. and daily supply of 120,000,000 gals. to which has been added the lakes of Maltby Park, w. of the city, and the waters of Saltonstall Lake, giving of pure and soft water enough for a city of 300,000 inhabitants.

The first church of N. H. dates from 1639, and the numerous places of worship include Congl., Meth. Episc., Prot. Episc., Bapt., Lutheran, Presb., Univ., Rom. Cath., Jewish, and Second Advent buildings. There are Masonic lodges, Odd Fellow, and other secret organizations; a general hospital with 1,500 beds, and the N. H. hospital; the N. H. and the St. Francis orphan asylums; a free public library with a new building (cost $100,000); and active grand army posts, temperance secret societies, various charitable homes, a dispensary, several mutual aid organizations, and over 150 charitable societies.

There are 37 school-houses, 30 owned by the city, with room for 15,000 pupils, and schools of the best character, richly provided in every way, and free to all. There are a large number of private schools, a collegiate institute, seminaries for girls, and the Hopkins Grammar School; while above all these stands Yale University (q.v.), started 1701, Nov., in a minister's study at Killingworth (now Clinton), 20 m. e. of N. H.; removed to N. H. 1716–7; now occupying more than 30 university buildings, bearing on its roll of graduates nearly 15,000 names, and with a broadly developed and substantial strength in all its various faculties and schools.

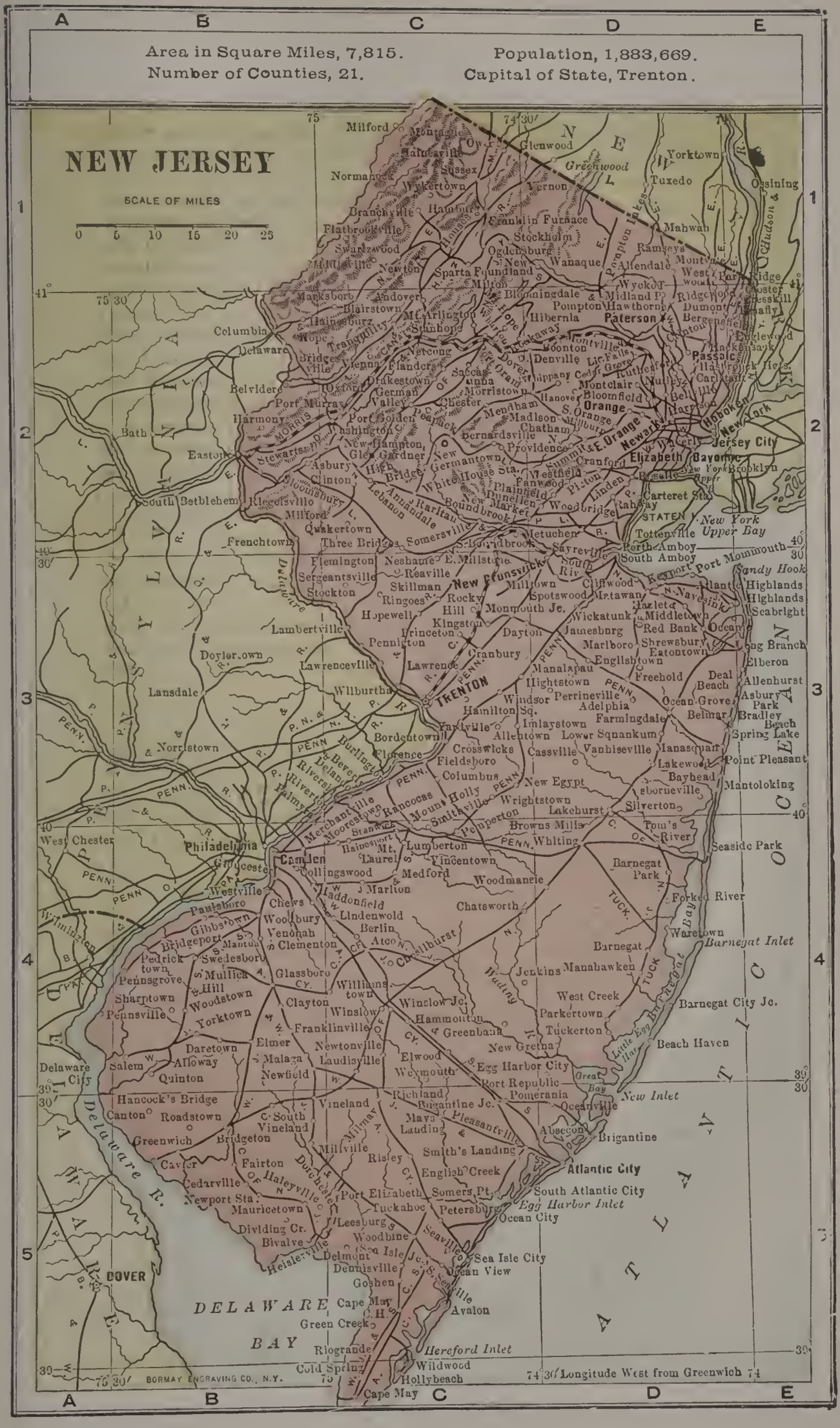
The national buildings at N. H. are the custom-house and post-office. The city hall, built 1861, is one of the finest in New England; the county court-house cost (1873) $134,000. Other notable institutions are the public library, the libraries and archives of the New Haven Colony Historical Society, and the American Historical Society, the Young Men's Institute, the New Haven and Grace hospitals, and the New Haven and St. Francis (R. C.) orphan asylums. Pop. (1775) 1,800; (1800) 4,049; (1810) 5,772; (1820) 7,147; (1830) 10,180; (1840) 12,923; (1850) 20,345; (1860) 39,267; (1870) 50,840; (1880) 62,882; (1890) 81,298; (1900) 108,027; (1910) 133,605.

NEW HEBRIDES, *nū hĕb'rĭ-dēz*, group or long chain of volcanic islands in the Pacific Ocean, about 200 m. n.e. of New Caledonia, since 1887 administered by a mixed commission of French and English officers. Area, est. 3,500 sq. m. They are regarded as the most easterly point of the w. division of Polynesia, and are part of the long chain of groups in the w. Pacific known as Melanesia. The N. H. group comprises Espiritu Santo (65 m. long by 20 broad), Mallicollo (60 m. long by 28 broad), Vati Ambrym, Annatom, Erromango, and Tanna, with an active volcano. Aurora, one of the most fertile of the group, disappeared 1871, leaving no trace. Most of the group are hilly and well wooded, some even mountainous. The soil is very fertile; but the climate is deemed unhealthful for strangers. The most important woods are ebony and sandal; principal edible products, yams, bananas, cucumbers, cocoa-nuts, and sweet potatoes; and the only animal of consequence, a diminutive species of hog, which, full-grown, is no bigger than a rabbit. The inhabitants are fierce, excessively dirty and unintelligent; and are said to have been mostly cannibals; but Christian missionaries have wrought a great change in them. Erromango is a well-known name in missionary history, being the scene of the barbarous massacre of the Rev. John Williams—generally called the Martyr of Erromango. Pop. about 70,000.

NEW HOL'LAND: former name for Australia (q.v.).

NEW INN HALL, Oxford: hall, with certain gardens adjoining, presented to the warden and fellows of New College, Oxford Univ., by William of Wykeham 1392. The first principal on record appears 1438. During the civil war it was used as a mint for Charles I. It was restored to the purposes of instruction by Dr. Cramer, late principal, who erected a handsome building for the use of the students.

NEW IRE'LAND: long, narrow island in the Pacific Ocean, about 20 m. n.e. of New Britain (q.v.), from which it is separated by St. George's Channel: lat. 2° 40′—4° 52′ s., long. 150° 30′—152° 50′ e.; length about 240 m.; average breadth, 12 m. The hills rise 1,500 to 2,000 ft., and are richly wooded. The principal trees are cocoas on the coast, and forests of areca-palm in the interior. The chief products are sugar-cane, bananas, yams, cocoa-nuts. Dogs, pigs, and turtles abound. Except a Polynesian colony on the s. coast, the natives apparently resemble the Solomon Islanders; they are cannibals like the inhabitants of New Britain (q.v.), to whom they are inferior in some respects; but our information about them is extremely scanty. Politically, N. I., with the island of New Britain, is now a part of Kaiser Wilhelm's Land.



Area in Square Miles, 7,815.
Number of Counties, 21.
Population, 1,883,669.
Capital of State, Trenton.
NEW JERSEY
SCALE OF MILES
0 5 10 15 20 25
Milford
Montague
Glenwood
Greenwood L.
Yorktown
Tuxedo
Ossining
Normanock
Sussex
Vernon
Branchville
Hamburg
Franklin Furnace
Mahwah
Flatbrookville
Stockholm
Ogdensburg
Ramseys
Swartzwood
Newton
Wanaque
Allendale
Sparta
Foundland
Milton
Bloomingdale
Wyckoff
Midland P.
Ridgewood
Marksboro
Andover
Blairstown
Pompton
Hawthorne
Dumont
Hibernia
Paterson
Bergenfield
Columbia
Delaware
Tranquility
Stanhope
Netcong
Montville
Boonton
Passaic
Bridgeville
Vienna
Flanders
Denville
Lic. Falls
Drakestown
Saccarappa
Cedar Grove
Rutherford
Belvidere
Oxford
German
Morristown
Montclair
Nutley
Port Murray
Valley
Chester
Hanover
Bloomfield
Harmony
Port Golden
Mendham
Madison
Orange
Bath
Washington
Chatham
Bernardsville
Newark
Jersey City
Easton
New Hampton
Providence
Elizabeth
Bayonne
Asbury
Clinton
Germantown
Westfield
Cranford
Brooklyn
Bloomsbury
Riegelsville
Milford
Raritan
Boundbrook
Plainfield
Dunellen
Woodbridge
Carteret
Rahway
South Bethlehem
Lebanon
Annandale
New Market
Quakertown
Somerville
Metuchen
Tottenville
New York
Upper Bay
Frenchtown
Three Bridges
Sayreville
Perth Amboy
Port Monmouth
Flemington
Neshanic
E. Millstone
South Amboy
Sergeantsville
Reaville
New Brunswick
Keyport
Sandy Hook
Stockton
Skillman
Millstown
Cliffwood
Atlantic Highlands
Ringoes
Rocky Hill
Spotswood
Matawan
Navesink
Highlands
Hopewell
Monmouth Je.
Wickatunk
Middletown
Seabright
Lambertville
Kingston
Princeton
Dayton
Jamesburg
Red Bank
Oceanic
Pennington
Marlboro
Shrewsbury
Long Branch
Doylestown
Cranbury
Eatontown
Lawrenceville
Lawrence
Englishtown
Elberon
Manalapan
Freehold
Deal Beach
Allenhurst
Lansdale
Wilburtha
TRENTON
Hightstown
Windsor
Perrineville
Adelphia
Ocean Grove
Asbury Park
Hamilton Sq.
Belmar
Bradley Beach
Yardville
Imlaystown
Farmingdale
Bordentown
Allentown
Lower Squankum
Spring Lake
Norristown
Florence
Crosswicks
Cassville
Vanhiseville
Manasquan
Fieldsboro
Lakewood
Point Pleasant
Columbus
New Egypt
Bayhead
Mantoloking
Wrightstown
Silverton
Lakehurst
Browns Mills
Tom's River
West Chester
Philadelphia
Camden
Lumberton
Whiting
Seaside Park
Gloucester
Collingswood
Vincentown
Medford
Barnegat Park
Westville
Woodmansie
Paulsboro
Chews
Haddonfield
Marlton
Forked River
Gibbsboro
Woodbury
Lindenwold
Chatsworth
Bridgeport
Venonah
Berlin
Waretown
Barnegat Inlet
Pedricktown
Swedesboro
Clementon
Atco
Barnegat
Pennsgrove
Mullica Hill
Glassboro
Williamstown
Jenkins
Manahawken
Sharptown
Woodstown
Clayton
Winslow Jc.
West Creek
Pennsville
Yorktown
Franklinville
Hammonton
Parkertown
Barnegat City Jc.
Elmer
Newtonville
Greenbank
Tuckerton
Daretown
Malaga
Laudisville
New Gretna
Beach Haven
Salem
Alloway
Newfield
Elwood
Delaware City
Quinton
Egg Harbor City
Weymouth
Port Republic
Great Bay
New Inlet
Hancock's Bridge
Richland
Pomerania
Canton
Roadstown
Vineland
Bugantine Jc.
Oceanville
South Vineland
Mays Landing
Pleasantville
Absecon
Greenwich
Bridgeton
Millville
Brigantine
Smith's Landing
Cavier
Fairton
Risley
Atlantic City
English Creek
Cedarville
Haleyville
Port Elizabeth
Somers Pt.
South Atlantic City
Newport Sta.
Mauricetown
Tuckahoe
Petersburg
Egg Harbor Inlet
Ocean City
Dividing Cr.
Leesburg
Woodbine
Seaville
Bivalve
Sea Isle Jc.
Sea Isle City
Heislerville
Delmont
Dennisville
Ocean View
Goshen
Cape May C.H.
Avalon
DOVER
DELAWARE BAY
Green Creek
Riogrande
Hereford Inlet
Cold Spring
Wildwood
Hollybeach
Cape May
ATLANTIC OCEAN
Longitude West from Greenwich
BORMAY ENGRAVING CO., N.Y.

NEW JERSEY, *nū jer'zĭ:* state; one of the 13 original states in the American Union; ranking (1910) 1st in fertilizing marl, zinc, and silk goods; 4th in iron ore; 14th in potatoes; 18th in hay; 9th in manufactures, 8th in buckwheat; 9th in rye; 16th in population; 6th in pig iron; 29th in corn.

Location and Area.—N. J. is in lat. 38° 55′—41° 21′ n., long. 73° 53′—75° 33′ w.; bounded n. by N. Y., e. by the Hudson river, Staten Island Sound, Raritan Bay, and the Atlantic Ocean, s. by Delaware Bay, w. by Penn., Del., and Delaware river and bay; n. boundary, from the w. bank of the Hudson, in lat. 40° n., to a point on the n. bank of the Navesink, at its junction with the Delaware at Port Jervis; e. boundary, between it and N. Y., through the Kills, Hudson river, and New York Bay (as determined by an interstate commission 1889), a line extending through the middle of the channel in New York Bay, and e. of Ellis and Liberty islands and the Robin's Reef light-house (N. Y. losing and N. J. gaining these islands); extreme length 167⅜ m.; extreme breadth 59 m., least 32 m.; 7,815 sq. m. (5,001,600 acres); cap. Trenton.

Topography.—The surface of N. J. is very diversified. In the n. half it is traversed by three distinct mountain ranges; in the s. half there are no notable elevations, the centre being an undulating plain sloping e. to the ocean and w. to Delaware river and bay, from a median tract 150 to 190 ft. above the sea. Two of the mountain ranges—the Kittatinny, or Blue, and the Highland—belong to the Appalachian chain, and the third and lowest range, between the Highlands and the ocean, is a part of the system that extends from Mass., through N. Y., and enters N. J. below the Palisades. The highest of the ranges is the Kittatinny, an almost unbroken ridge from the N. Y. state-line to the Delaware Water Gap, which is 1,479 ft. above sea-level at the Gap and 1,800 at High Point, near the N. Y. line. The Highland range is of directly opposite formation, being a series of broken or detached ridges, nearly all of which have distinct names, such as Green Pond, Hamburg, Wawayanda, Schooley's, and Musconetcong mountains. Its highest point is Rutherford's Hill, on Hamburg Mountain, 1,488 ft. The famous Palisade Mountain, or Palisades, a picturesque trap-ridge, begins in Rockland co., N. Y., about 8 m. w. of the Hudson river, takes a bold curve to the river, and then follows it down to Hoboken. W. of it 10 to 18 m., and nearly parallel with it, are ridges known as First, Second, and Third mountains, which include several popular sections, as the Orange Mountain, Fairmount, etc. Further w. and s., and connected with the general trap-range, are Rocky Hill, Ten-Mile-Run Mountain, Long Hill, Sourland Mountain, Goat Hill, Round Mountain, and the horseshoe-shaped Pickle Mountain. The most elevated part of the s. half of the state is the Navesink Highlands (q.v.), s. of Sandy Hook. The Delaware river drains the w. half of the state, has 15 tributaries, and empties into Delaware Bay; the Passaic and Hackensack—both navigable—unite, and

empty into Newark Bay; the Raritan, with two branches and three tributaries, empties into Raritan Bay; and the Rahway, Navesink, Shrewsbury, Shark, Manasquan, Metedeconk, Tom's, Mullica's, and Great Egg Harbor rivers empty into the ocean. The bays are: Delaware, Newark, Raritan, Sandy Hook, Barnegat, Little and Great Egg Harbors, Great, and Absecom; and the lakes: Budd's, Culver's, Green, Greenwood (q.v.), Hopatcong, Morris, Long, Sucker, Swartout's, and Wawayanda. Almost the entire sea-coast from Sandy Hook to Cape May has been made available for summer and autumn residence and transient recreation, the largest of the resorts being Long Branch, Asbury Park, Ocean Grove, Long Beach, Atlantic City, and Cape May city. Greenwood and Hopatcong lakes are popular interior resorts, and the Wawayanda region has recently grown into large importance.

Climate.—The climate varies greatly in different parts of the state, but is generally healthful. The most noticeable changes are along the sea-coast, where ocean breezes, land winds, and depressing humidity alternate. The annual mean temperature of the n. half is 48° to 50°; of the s. half 53° to 55°; at Newark 51·25°, New Brunswick 51·1°, Sandy Hook 49·9°; annual rainfall in state about 44 in., at Newark 54·73 inches. The temperature is so delightful at Atlantic City that it is frequented in winter almost as largely as in summer, though there is a fall of about 33°.

Geology.—The geological history of N. J. is more than ordinarily interesting from the fact that all the great periods, excepting the carboniferous and Jurassic, are represented in the state. The present minute knowledge of this branch of the state's history is due almost exclusively to the labors of George H. Cook, LL.D. (1818, Jan. 5—1889, Sep. 22), state geologist, whose *Geology of New Jersey* (1868) was accompanied by 8 large maps, warmly praised by the most famous geologists of the world. The oldest rock formation is the azoic or archaic of the Highlands, a belt 23 m. wide on the N. Y. and N. J. boundary, and 9 m. wide on the Delaware river, with outcroppings near Trenton and at Jersey City, all stratified, and with syenitic gneiss predominating. This formation contains also limestone, slate, and granite, and magnetic iron ore. The portion of the belt in Sussex, Passaic, Morris, and Warren cos. contains several mines, whose product is partially worked in the state, but chiefly in the Penn. anthracite region. The Silurian and Devonian epochs are found n.w. of the azoic rock, and show magnesian limestone—used for building purposes and making lime—and hematite ore, with conglomerate, sandstone, and Potsdam sandstone in the lower Silurian system. The triassic period appears s.e. of the Highlands, underlying Bergen, Passaic, Essex, Union, Somerset, Hunterdon, Middlesex, and Mercer cos., and attaining a width of 30 m. on the Delaware river. This formation holds trap-rock, sandstone for building, fossil fish. and

copper ores and native copper. In the cretaceous representatives, s.e. of the triassic, is the plastic clay series, which yields excellent fire, porcelain, and potter's clay, and specimens of fossil wood and leaf-prints. The next two formations are the clay marl and greensand marl, of which there are three distinct beds, extending from Sandy Hook to Salem, about 90 m. long and 12 to 25 ft. thick, the beds being separated by belts of sand. The marl contains sea-shells, pieces of coral, sharks' teeth, saurian bones, etc., and is exceedingly valuable for fertilizing. In the s.e. are evidences of the tertiary age, with miocene calcareous marl in Cumberland co. Glass-makers' sand is found in large quantities at Millville, Winslow, Jackson, and elsewhere in the s., from which one-third of the product of green glass in the United States is made. The drift period is widely represented, isolated patches of alluvial beds are found, peat-bogs are frequent, and the coast-line is a constantly shifting sand-dune. The economic properties, besides those mentioned, are roofing and writing slates, flag and paving stones, zinc ores that supply more than one-fifth of the metallic zinc produced in the United States, galena lead ore, nickel, kaolin, infusorial earth, graphite or plumbago, sulphate of baryta, manganese, and iron pyrites. To these should be added the white cedar logs from the remarkable cedar 'mine,' or sunken forest, in Cape May co. This mine has supplied choice wood and excellent shingles for more than a century, and geologists claim that the trees have been covered with swamp and subsequent growths for more than 1,000 years. The forest area comprises about one-third the state, and contains pine, cedar, oak, hickory, chestnut, basswood, dogwood, ash, and elm. Wild grapes, apples, peaches, plums, cherries, and water-melons and musk-melons are very prolific; and more than one-half the cranberries produced in the United States are grown in N. J.

Zoology.— There are numerous black bears, raccoons, opossums, squirrels, ground-hogs, rabbits, musk-rats, red and gray foxes, minks, otters, and skunks; black whales and porpoises; turtles, terrapins, tortoises, and lizards. Of the serpent tribe there are rattle, copper-head, milk-adder, black, and water snakes; of birds there are turkey-buzzards, black vultures, eagles, falcons, hawks, owls, and fish-hawks; ruffled grouse, quail, heron, plover, snipe, woodcock, rail, wild geese, duck, brant, teal, and ibis; humming-birds, whip-poor-wills, swallows, robins, wax-wings, turtle-doves, and wild pigeons: and of fish a great variety, including perch, sunfish, black-fish, sheep's-head, porgy, weakfish, common and Spanish mackerel, bluefish, cod, flounder, halibut, salmon, brook-trout, smelt, shad, herring, moss-bunker, sea-horse, sturgeon, shark, and devil-fish. Several varieties of oysters and clams are largely cultivated.

Agriculture.—There are about 35,000 farms in the state, comprising about 3,000,000 acres, of which practically two-thirds is improved land. The total value of

all farm property is approximately $10,000,000. The principal crops are corn, wheat, oats, rye, buckwheat, potatoes, and hay. N. J. has never occupied a distinctive position as an agricultural community. However, aside from its staple crops mentioned above, peaches, apples, and pears are common in all sections, being very extensively grown in the n. and n.w., while large acreages of strawberries, raspberries, and blackberries are cultivated in the s., and cranberries form a staple product of Burlington and Ocean counties. There is a large spontaneous growth of huckleberries; grapes are grown extensively in the s.; and plums, cherries, and currants are common in all sections. Truck farming is notably good, while market gardening and floriculture are very profitable, and in the n., central, and s.w. sections dairying is successfully carried on. Poultry farms net good returns.

Manufactures.—There are about 16,500 manufacturing establishments, turning out products whose aggregate value is about $650,000,000. The most important products are silk; brick and terra-cotta; jewelry; leather; men's felt and wool hats; and shoes. Many cities are noted for particular products, and it has been claimed a wider variety of articles are manufactured in Newark than in any other city in the United States. The oyster and fish industry in the state is also extensive, there being about 15,000 acres of productive oyster beds available, while the famous Maurice river oyster beds alone produce about $2,275,000 worth of bivalves annually, more than the value of N. J.'s wheat crop. From the Atlantic Ocean and Delaware Bay vast quantities of clams and fish of various kinds are secured, while shad and sturgeon are caught in large numbers in Delaware Bay and river.

Transportation.—There are over 2,300 miles of railway tracks in N. J., a great number of important roads, such as the Pennsylvania, Lackawanna, Lehigh Valley, Erie, etc., passing through the state. There are also nearly 1,200 miles of electric, cable, and horse railway, a large percentage of which are under control of the Public Service Corporation. A practically continuous trolley service from Camden to Jersey City serves, in effect, to unite New York and Philadelphia. The canal systems embrace the Delaware and Raritan, extending from Bordentown to New Brunswick; and the Morris extending from Jersey City to Phillipsburg and uniting with the canal system of Pennsylvania.

Finance and Banking.—The finances of N. J. are in excellent condition, there being no bond issues for which interest and a sinking fund must be provided, nor is there a state tax levied. Most of the state's revenue comes from the tax on railroads and other corporations which, owing to the easy laws in this regard, have taken out papers of incorporation in N. J. in large numbers. There are about 150 national banks, over 20 State banks, over 30 savings banks, and over 50 trust companies.

Education.—N. J. spends about $12,250,000 a year in the maintenance of its public schools, in which there are over 400,000 pupils enrolled with over 10,300 teachers. There are public normal schools, numerous private secondary schools, co-educational colleges and universities and colleges and universities for men only, and schools of theology, technology, and law. Of the institutions for higher education the most prominent are Princeton University, Rutgers College, and the Stevens Institute of Technology. Among the private academies Lawrenceville School, Princeton Preparatory School, and Peddie Institute enjoy national reputation.

Religion.—The strongest denominations in the State are the Presbyterian, Methodist Episcopal, and Roman Catholic.

Charities and Corrections.—These include a state prison at Trenton, a reformatory for men and boys near Rahway; a state Home for Girls near Trenton, a similar home for boys near Jamesburg; State Hospitals for the Insane near Morristown and Trenton; a home for feeble-minded women and one for feeble-minded children, both near Vineland; the state village for epileptics near Skillman; a school for the deaf at Trenton; and homes for soldiers and sailors and their wives at Kearney and Vineland. Besides these there are many private and denominational charitable institutions.

History.—The earliest known settlement was made by the Dutch from New Amsterdam (New York), at Bergen 1614–20; and having claimed the whole region as an unexplored part of the New Netherlands, they penetrated to the interior and erected Fort Nassau on the Delaware, 4 m. below Philadelphia, 1623. In 1634 the king of England granted the whole Delaware country to Sir Edmund Ployden, who called it New Albion: and 1638 a colony of Swedes and Finns made settlements in the same region, on land bought of the native Indians and renamed New Sweden. Soon afterward the Dutch and Swedes united, and expelled the English colonists: and later (1655) the Dutch, under Gov. Petrus Stuyvesant, of the New Netherlands, conquered the Swedes and returned most of them to Sweden. While the Dutch were strengthening themselves in the new country, the expelled English and Swedes sought redress from the king; but he, ignoring the claims of each party, granted

to his brother, the Duke of York, the entire region between the Delaware and Connecticut rivers, 1664, and sent an expedition to take possession of it. The various settlements were forced to submission, and patents were granted to parties from Long Island and New England who desired to colonize. The first permanent settlement under the English was made at Elizabethtown, and Newark, Middletown, and Shrewsbury were founded soon afterward. While these settlements were being made, the Duke of York transferred his grant to Lord Berkeley and Sir George Carteret, who named the region New Jersey, after the island of Jersey, of which Carteret had been royal governor. Sir George Carteret sent his brother Philip as gov., and on his arrival with the first constitution of the colony, 1665, he established the seat of govt. at Elizabethtown. After an unpopular administration of five years, Philip was compelled by the people to leave the colony, and was succeeded for a short time by James, son of Sir George, afterward returning for a brief tenure of office. In 1673 Lord Berkeley sold his share in the grant to John Fenwick and Edward Byllinge, and the same year the Dutch recaptured New Amsterdam from the English and regained the whole province of N. J., which they renamed Achter Kol. In the following year the province reverted to the English by treaty, and the king made a new grant to the Duke of York, who in turn gave Sir George Carteret a fresh conveyance, but covering only a part of the original territory. The duke also included the province in a commission to Sir Edmund Andros, gov. of New York, thus uniting the provinces under one governor. This act led to serious interprovincial trouble, which culminated in the arrest of Gov. Philip Carteret by Gov. Andros, an investigation by the Duke of York, a termination of Gov. Andros's administration (1681), and a recognition of the rights of the two Quaker proprietors, John Fenwick and Byllinge. In 1682 the proprietors sold their part of the province to William Penn and his associates, and the province was divided into E. and W. Jersey, the boundary being a line from Little Egg Harbor to the Delaware river, at lat. 41° n., E. Jersey remaining under the jurisdiction of the English, and W. Jersey under that of the associates. Within a few months after the division, Penn and 11 other Quakers bought all of Carteret's rights in E. Jersey. Unlike nearly all other states, N. J. had no Indian troubles in its early history. Under the proprietors it grew rapidly in population and material wealth; but dissensions among them, over property rights, led them to surrender their corporate rights to the crown 1702, and Lord Cornbury was appointed gov. of N. Y. and N. J., though each had a separate assembly. In 1708 N. J. secured a separate administration under Gov. Lewis Morris, and her last royal gov. was William Franklin, son of the philosopher. In 1776 the colony adopted a state constitution,

and the first legislature met in Princeton. While loyal to the crown, there were, nevertheless, mutterings of discontent, of ill-concealed defiance of law officers and a spirit of restlessness, restrained by the wave of patriotism evoked by the French and Indian war, but which swept on with increasing force after the opening of the year 1770. The opening of the American revolution found N. J. divided in sentiment. The Calvinistic element, represented so largely in E. Jersey, took the initiative. The spirit of war, as in New England, appeared in the town meeting. The professional classes, the members of the Society of Friends, and the large merchants were either opposed to war or were non-combatants. A minority awaited the results of agitation. The strength of the element loyal to the home government may be shown from the fact that upon 1776, July 2, when N. J. asserted her statehood, the constitution contained a proviso that the document should not be operative in case of a reconciliation between England and N. J. William Franklin, the last colonial governor of N. J., remained loyal to the crown, and, banished from N. J., sought refuge among tory sympathizers in New York city, becoming the adviser of those planning movements of tory invaders in the state. Largely conducted in the n. central portion of N. J., under the control of crown sympathizers, these raiders gained the name of 'Pine Robbers.' During the revolution, nearly 100 battles and skirmishes were fought upon the soil of the state. Most conspicuous were the battles of Trenton (1776, Dec. 26), Princeton (1777, Jan. 3), Red Bank (1777, Oct. 22), Monmouth (1778, June 28), and Paulus Hook (1779, Aug. 19). Among minor engagements of importance were the fights at Bound Brook (1777, April 13), Egg Harbor (1778, Oct. 15), Hancock's Bridge (1778, March 21), Tom's River (1782, March 24), the burning of Bordentown (1778, May 8), and no less than a score of engagements in and around Elizabeth and Newark and nearby territory. During the war occurred the 'retreat across the Jerseys' and Washington's two winter occupations of Morristown. At the close of the war N. J. was sadly impoverished. Her spirit was distinctly federal. She participated in the Annapolis Convention, her representatives advocated the 'New Jersey plan' at Philadelphia, in the framing of the federal constitution, which she adopted without a dissenting voice. Before the second war with England, a chain of state banks was established, bridges crossed the rivers between Philadelphia and New York, steamboats were to be found upon the Delaware and Hudson rivers, highways were extended to every accessible part of the state, and the development of water-power led to the establishment of many small factories. The second war with England blighted the prospects of growth. Although no engagements occurred upon her soil, N. J., as much for

the protection of Philadelphia and New York, as for her own interest, furnished militia to garrison forts on the Delaware and at Sandy Hook. The position of the state led to overland transportation of military supplies between the North and South, for the reason that the Atlantic seaboard was blockaded by British fleets. The development of the industrial era, following the close of the war of 1812, broken by the panics of 1817, 1837, and 1857, marked the growth of Newark, Jersey City, Paterson, Elizabeth, New Brunswick, Trenton, and Camden. The period of social unrest characteristic of Jacksonian dominancy in politics led to the adoption of a new state constitution in 1844, pronounced reforms of a penalogical and charitable character, the extension of the public school system, and the growth of railroads. The civil war found N. J. ready to respond to the call for troops. To the cause of the Union she furnished 88,305 men, or within 10,501 of her entire militia, and for the organization, subsisting, supplying, supporting, and transporting her troops she paid nearly $3,000,000. Following the war came a period of prosperity which has since continued.

Government.—The executive authority is vested by the constitution in a gov. elected for 3 years and ineligible for re-election till after an intervening term; the legislative in a general assembly, comprising a senate of 21 members elected for 3 years, and a house of representatives of 60 members elected for 1 year; and the judicial in a court of errors and appeals, court of chancery, supreme court, courts of common pleas, courts of quarter sessions, circuit courts, courts of oyer and terminer, orphans' courts, and justices of the peace. The court of errors and appeals is the last court of resort; has appellate jurisdiction only; holds 3 terms annually; is composed of the chancellor, the judges of the supreme court, and 6 other judges appointed by the gov.; and comprises the sole pardoning power of the state — the gov., chancellor, and 6 of its judges. The chancellor is appointed by the gov., with the consent of the senate, for a term of 7 years; 2 vice-chancellors are appointed by the chancellor; sessions of the court are held 3 times annually at Trenton, and by the vice-chancellors in the n. and s. parts of the state. The supreme court is composed of a chief-justice, and 8 assoc. justices, all appointed by the gov. and senate for 7 years; and it holds 3 terms annually in Trenton. These judges also hold circuit and oyer and terminer courts 3 times annually in each co., and are also *ex officio* judges of the various co. courts. Sheriffs, coroners, and justices of the peace are elected by the people in their respective counties.

The successive govs., with their terms of service, are as follows: *East Jersey*: Philip Carteret 1665–81; Robert Barkeley 1682–85; Thomas Rudyard (dep.) 1683; Gaven Lawrie 1683; Lord Niel Campbell 1685; Andrew

Hamilton 1692–97; Jeremiah Basse 1698–9. *West Jersey*: Samuel Jennings (dep.) 1681; Thomas Oliver 1684–5; John Skien (dep.) 1685–87; William Welsh (dep.) 1686; Daniel Coxe 1687; Andrew Hamilton 1692–97; Jeremiah Basse 1697–99; Andrew Hamilton 1699–1702. *East and West Jersey United*: Lord John Cornbury 1703–08; John Lovelace 1708; Richard Ingolsby (lieut.gov.) 1709–10; Andrew Hunter 1710–20; William Burnet 1720–27; John Montgomery 1728–31; Lewis Morris 1731–2; William Crosby 1732–36; John Hamilton 1736–38 — these were also govs. of N. Y. at the same time. *Separate from N. Y.*, Lewis Morris 1738–46; John Hamilton 1746–7; Jonathan Belcher 1747–57; John Reading 1757–8; Francis Barnard 1758–60; Thomas Boone 1760–1; Thomas Hardy 1761–63; William Franklin 1763–66. *Revolution and State*: William Livingston 1776–90; William Paterson 1790–92; Richard Howell 1792–1801; John Lambert (vice-pres. council) 1802–3; Joseph Bloomfield 1803–12; Aaron Ogden 1812–3; William S. Pennington 1813–15; Mahlon Dickerson 1815–17; Isaac H. Williamson 1817–29; Peter D. Vroom 1829–32; Samuel L. Southard 1832–3; Elias P. Seeley 1833–4; Peter D. Vroom 1835–6; Philemon Dickerson 1836–7; William Pennington 1837–43; Daniel Haines 1843–4. *Under the New Constitution*: Charles S. Stratton 1844–48; Daniel Haines 1848–51; George F. Fort 1851–54; Rodman M. Price 1854–57; William A. Newell 1857–60; Charles S. Olden 1860–63; Joel Parker 1863–66; Marcus L. Ward 1866–68; Theodore F. Randolph 1868–72; Joel Parker 1872–75; Joseph D. Bedle 1875–78; George B. McClellan 1878–81; George C. Ludlow 1881–84; Leon Abbett 1884–87; Robert S. Green 1887–90; Leon Abbett 1890–93; George J. Werts 1893–96; John W. Griggs 1896–98; Foster M. Voorhees 1898–1902; Franklin Murphy 1902-5; E. C. Stokes 1905-8; J. F. Fort 1908-11; 1911— Woodrow Wilson.

Politics.—Elections are held Tuesday after the 1st Monday in Nov. The legislature meets 2d Tuesday in Jan.; no limit of session; paupers, insane, idiots, and convicts are excluded from voting. N. J. has 12 electoral votes. Her votes for pres. and vice-pres. have been as follows: 1788, George Washington, pres., 6, and John Adams 1 and John Jay 5, vice-pres.; 1792, George Washington and John Adams 7; 1796, John Adams and Thomas Pinckney; 1800, John Adams and Charles C. Pinckney; 1804, Thomas Jefferson and George Clinton 8; 1808, James Madison and George Clinton; 1812, De Witt Clinton and Jared Ingersoll; 1816, James Monroe and Daniel D. Tompkins; 1820, James Monroe and Daniel D. Tompkins; 1824, Andrew Jackson and John C. Calhoun; 1828, John Quincy Adams and Richard Rush; 1832, Andrew Jackson and Martin Van Buren; 1836, William Henry Harrison and Francis Granger; 1840, William Henry Harrison and John Tyler; 1844, Henry Clay and Theodore Frelinghuysen 7; 1848, Zach-

ary Taylor and Millard Fillmore; 1852, Franklin Pierce and William R. King; 1856, James Buchanan and John C. Breckinridge; 1860, Abraham Lincoln and Hannibal Hamlin 4; 1864, George B. McClellan and George H. Pendleton 7; 1868, Horatio Seymour and Frank P. Blair, Jr.; 1872, U. S. Grant and Henry Wilson 9; 1876, Samuel J. Tilden and Thomas A. Hendricks; 1880, Winfield S. Hancock and William H. English; 1884, Grover Cleveland and Thomas A. Hendricks; 1888, Grover Cleveland and Allen G. Thurman 9; 1892, Grover Cleveland and Adlai E. Stevenson 10; 1896, William McKinley and Garret A. Hobart 10; 1900, William McKinley and Theodore Roosevelt 10; 1904, Theodore Roosevelt and Chas. W. Fairbanks, 12; 1908, William H. Taft and James S. Sherman.

Counties, Cities, and Towns.—N. J. is divided into 21 counties. In 1910 the most populous *counties* were: Hudson 537,231; Essex 512,886; Passaic 215,902; Camden 142,029; and *cities and towns:* Newark 347,469; Jersey City, 267,779; Paterson, 125,600.

Population.— (1790) white 169,954, free colored 2,762, slaves 11,423, total 184,139; (1800) white 194,325, free colored 4,402, slaves 12,422, total 211,149; (1810) white 226,868, free colored 7,843, slaves 10,851, total 245,562; (1820) white 257,409, free colored 12,460, slaves 7,557, total 277,426; (1830) white 300,266, free colored 18,303, slaves 2,254, total 320,823; (1840) white 351,588, free colored 21,044, slaves 674, total 373,306; (1850) white 465,509, free colored 23,810, slaves 236, total 489,555; (1860) white 646,699, free colored 25,318, slaves 18, total 672,035; (1870) white 875,407, colored 30,658, total 906,096; (1880) white 1,092,017, colored 39,099, total 1,131,116; (1890) white 1,397,295, colored 47,638, total 1,444,933; (1900) white 1,813,825, colored 69,844, total 1,883,669; (1910) 2,537,167.

NEW JERSEY, College of: see Princeton University.

NEW JERUSALEM CHURCH: see Swedenborg, Emanuel: Swedenborgians.

NEW LAN'ARK: see Lanark.

NEW LEBANON, *nū lĕb'a-non:* town, Columbia co., N. Y.; on the Chatham and Lebanon Valley railroad, 24 m. s.e. of Albany, 18 m. n.w. of Chatham, 8 m. w. of Pittsfield, Mass. The villages of Lebanon Springs, Tilden's, New Lebanon Centre, New Britain, West Lebanon, and Mount Lebanon are included in the town limits. Lebanon Springs has repute as a summer resort. There are several thermal springs, of which the largest is of great power, furnishing water for the baths and for running three mills. The temperature of this spring is 73° Fahr. throughout the year. There are several machine shops; grist and saw mills; glass-works, and the oldest factory in the country for manufacture of barometers and thermometers. Medicines of various

kinds are manufactured on a large scale. At Mount Lebanon the parent society of the Shakers in America was founded 1787, and this remains one of their leading settlements. There are about 600 members of the society. They have about 4,000 acres of land, and are engaged largely in the production of medical herbs and plants and in growing garden seeds. They are engaged also in fruit growing, and they manufacture large quantities ot cider apple-sauce, chains, brooms, and baskets. Pop. 1,700.

NEW LONDON, *nū lŭn'dŭn:* city, port of entry, and one of the capitals of New London co., Conn.; lat. 41° 22′ n., long. 72° 9′ w., on the w. bank of the Thames river, 3 m. from Long Island Sound, 40 m. s.e. of Hartford, 50 m. e. of New Haven. It is on the New York, New Haven and Hartford, and the Central Vermont railroads and is also connected with New York and all the sound ports by steamships. The harbor is one of the best along the Atlantic coast and is defended by Forts Trumbull and Griswold. Large quantities of coal are brought to this point for distribution to the inland portions of New England; there is considerable coast trade, and a small fleet still is engaged in the seal and other fisheries. The city is built on a sharp declivity, and from the hills which rise behind it fine views are obtained. A number of small islands, with fine stretches of sea beach, are within easy reach by small steamers, which, during the summer, make frequent trips and carry many visitors thereto. The manufacturing establishments include foundries and machine shops, cotton-gin factory, ship yards, woolen mills, silk mills, printing press works, bed-quilt mills, furniture factory, etc. The city contains excellent public and parish schools, the new London County Historical Society and Library, a public library, parks, churches, city hall, court-house, banks, etc. Among places of interest are the Old Town Mill (built 1646), the Hempstead House, one of the oldest in Connecticut, and the little school-house where Nathan Hale taught. There is a U. S. naval station on the e. side of the river, just above the city. N. L. was founded in 1646 by John Winthrop, the younger, and was known as Naumeag until 1658, when it received its present name. During the revolutionary war the town suffered from attacks by the British, the most disastrous occurring 1781, Sep. 6, when a force of British under Benedict Arnold assisted by a fleet of 32 vessels attacked the town, killed a number of its inhabitants, and burned the wharves and many of the buildings. A large shaft 127 ft. high has been erected in memory of this attack. The city was incorporated in 1784 and its govt., administered under a charter of 1894, consists of a mayor, elected for 3 years, and a city council. The school board is chosen by popular vote. The city owns and operates the water-works. Pop. (1910) 19,659.

NEWMAN, *nū'man*, FRANCIS: b. England; d. 1660, Nov. 18. He removed to what is now the state of N. H. 1638, and afterward joined the New Haven colony and became a leader in its affairs. Under Gov. Theopilus Eaton he was sec. of the colony, and 1653 asst. gov. and commissioner to Manhattan to seek redress from Gov. Stuyvesant for injuries which the New Haven inhabitants had received from the Dutch. He served the united colonies as commissioner 1654 and 58. In the latter year he was elected gov., and held this office till his death.

NEWMAN, FRANCIS WILLIAM: born 1805, London; brother of Cardinal John Henry N. He was educated at the school of Ealing, thence passed to Worcester College, Oxford, where he obtained first-class honors in classics and mathematics 1826, and, in the same year, a fellowship in Baliol College. This fellowship he resigned; and he withdrew from the univ. 1830, at the approach of the time for taking the degree M.A., declining the subscription to the Thirty-nine Articles, which was required from candidates for the degree. After a lengthened tour in the East, he was appointed classical tutor in Bristol College, 1834. In 1840 he accepted a similar professorship in Manchester New College, and, 1846, his great reputation for scholarship, and his general accomplishments, led to his being appointed to the chair of Latin, in University College, London, which he held till 1863. During all this time, he had not only been an active contributor to numerous literary and scientific periodicals, and to various branches of ancient and modern literature, but had also had a leading part in the controversies on religion, in which he had been directly opposite to his elder brother, being no less ardent as a disciple of the extreme rationalistic school than John Henry N. of the dogmatical. These opinions, and the system founded upon them form the subject of his well-known work, *Phases of Faith, or Passages from the History of my Creed* (1850); and of many essays in the *Westminster, Eelectie,* and other Reviews; but he is also author of very many separate publications. Of these, several regard the religious controversy—e.g., *Catholic Union; Essays Towards a Church of the Future* (1844); *A State Church not Defensible* (1846); *History of the Hebrew Monarchy* (1847); *The Soul, Its Sorrows and Aspirations* (1849). Others are on political or social topics—as, *Radical Reforms, Financial and Organic* (1848); *The Crimes of the House of Hapsburg* (1851); *Lectures on Pol. Economy* (1857); *Europe of the Near Future* (1871). A large number related to historical, classical, and scientific subjects, most important of which are *Contrasts of Ancient and Modern History* (1847); *Regal Rome* (1852); tralsla. into 'unrhymed metre' of the *Odes of Horace* (1853), and the *Iliad of Homer* (1856); a treatise on *Difficulties of Elementary Geometry: Handbook of Arabic* (1866); *Orthoepy* (1869), etc. He died 1897, Oct. 5.

NEW'MAN, JOHN HENRY, D.D., Cardinal: 1801, Feb. 21—1890, Aug. 11; b. London. He was educated at the school of Dr. Nicholas, at Ealing, whence he passed, 1817, to Trinity College, Oxford, of which college he became a scholar by competitive examination 1818. Having graduated 1820, he was elected fellow of Oriel College 1822, where he attracted the notice of Dr. Whately, and was by him employed in the preparation for publication of his well-known *Treatise on Logic*, and introduced to the editor of the *Encyclopædia Metropolitana*, to which he became a contributor. He was ordained 1824; and in the following year, his friend Dr. Whately having been appointed head of St. Alban's Hall, N. was by him selected as his vice-principal; but on being named tutor in his own college 1827, as also public examiner, he resigned the vice-principalship. In 1828 he was presented to the vicarage of St. Mary's, Oxford, in which church the sermons which he delivered at a late period had an extraordinary influence in forwarding the religious movement with which his name is permanently associated. At this period, N. was an earnest antagonist of the Rom. Cath. Church. He was one of those who transferred their support from Sir Robert Peel to Sir Robert Inglis on occasion of the former's introducing the Rom. Cath. Relief Bill; and he was one of the most active in commencing and carrying on the so-called Oxford movement—the great object of which was to counteract as well the Romanizing as the dissenting tendencies of the time, by restoring and bringing into notice what N. and his friends believed to be the catholic character of the English Church. With this view, he commenced, 1833, the series known as the *Oxford Tracts*, to which he was himself one of the chief contributors; and 1838 he also became editor of the *British Critic*, an organ of the same views; also editor, in conjunction with Dr. Pusey and Keble, of a *Library of Translations from the Greek and Latin Fathers*. He continued the publication of the Tracts till Number 90, which was written by himself, and the tendency of which was so distasteful to the Anglican authorities that the Heads of Houses at Oxford condemned the Tract, and the bp. of Oxford called on N. to discontinue the publication—a request with which he at once complied. The *British Critic* continued to advocate the same opinions; but 1843 that publication also was discontinued; and N., who had for some time resided at Littlemore, near Oxford, engaged, in company with some of his more youthful adherents, in study and ascetic exercises, thenceforward confined himself chiefly to his Littlemore residence, and eventually, 1845, Oct., was admitted into the Rom. Cath. Church. This step he immediately followed by the publication of *Development of Doctrine*, a work intended as an explanation of the process through which the writer's own mind had passed. Soon afterward, N. repaired to Rome, where, after some preparation, he was admitted to orders in the Rom. Cath. Church; and 1848, on his return to England, he established a branch of the

Congregation of the Oratory of St. Philip Neri, of which he was himself appointed superior. In 1852 he was appointed rector of the Cath. Univ., established in Dublin, an office which he held till 1859, when he resigned and returned to the oratory at Edgbaston, where he had erected a large convent, church, high school, and several charitable institutions, and where he remained till his death. Dr. N., in addition to the large share which he had in the publications above named, was the author of several very important works, some before and some after his withdrawal from Anglicanism. Of the former period are his *History of the Arians*, *Prophetical Office of the Church*, *The Church of the Fathers*, *Essay on Miracles*, *Translation of the Treatises of St. Athanasius*, with many learned Dissertations and several vols. of sermons. To the latter period belong the *Development of Christian Doctrine*, *Lectures on Catholicism in England*, *Apologia pro Vitâ Suâ*, *Letter to Dr. Pusey*, *Essay on Assent*, and *Letter to the Duke of Norfolk on Mr. Gladstone's Expostulation* (1875). N. was also author of two religious tales, *Loss and Gain* and *Callista*, and of some fine hymns, of which *Lead, Kindly Light*, has been sung the world over. He was made a cardinal deacon of the church 1879. Cardinal N. was master of a faultless English style, whose pellucid flow revealed the depth of his thought and the devoutness and saintliness of his spirit. His course aroused strong antagonism, but even his antagonists revered him as a man.

NEW'MAN, JOHN PHILIP, D.D., LL.D.: born New York, 1826, Sep. 1: bp. of the Meth. Episc. Church. He studied at Cazenovia (N. Y.) Seminary, and after a theological course entered, 1849, the ministry of the Meth. Episc. Church. After various pastorates he went abroad 1860. On his return he preached in Albany and New York, went to New Orleans, 1864, to represent this denomination at the south, and remained five years. He organized the Metropolitan Memorial Church at Washington 1869, and was chaplain of the U. S. senate 1869–74. In the latter year he became inspector of the govt. consuls in Asia. He returned, 1876, to the church that he had founded at Washington, and three years later he was appointed pastor of the Central Meth. Episc. Church in New York, with which he stayed three years, and was then (1882) engaged as acting pastor of the Madison Avenue Congl. Church in that city. After two years' service he resigned this charge, went to Cal., returned, and was with Gen. Grant in his last sickness, again returned, 1886, to his Washington church, and was elected bishop 1888. He was a member of the Society of Biblical Archæology, had great popularity as a preacher, and was in favor as a lecturer. Among his works are: *From Dan to Beersheba*, *Babylon and Nineveh*, *Christianity Triumphant*, and *America for Americans*. He died 1899, July 5.

NEW'MAN, Samuel: 1602–1663, July 5; b. Banbury, Oxfordshire, England. He graduated from Oxford at the age of 18, took orders in the Established Church, removed to Mass. 1636, preached about two years at Dorchester, and was settled over the church (Congl.) at Weymouth 1638–43. With part of his flock he removed 1644 to Seconet, and founded the town of Rehoboth, which included what are now the towns of Seekonk, Mass., and Pawtucket, R. I. He was author of *A Concordance for the Bible*, which was printed at London and Cambridge, and, 1643–1720, passed through five editions. It was known as the Cambridge Concordance, and for a while was thought to be the first concordance printed in English. N. died at Rehoboth.

NEWMARKET, *nū-mar'kĕt*, Canada, town in York County, in the Province of Ontario; on the Grand Trunk railroad; about 35 miles north of Toronto. It is in a region largely devoted to farming, and its industries are connected chiefly with agricultural products and the shipment of live-stock. Pop. (1891) 2,143; (1901) 2,125.

NEWMARKET, *nū mâr'kĕt*: market-town of England, famous for its horse-races; in a valley 13 m. e.n.e. of Cambridge: it is partly in the county of Cambridge and partly in Suffolk. It contains many well-built and elegant houses, among them the residences of gentlemen drawn to N. from their interest in the *Turf*. The market-house and the famous Jockey Club are the chief edifices. Malt-making and brewing are carried on; but the town owes its prosperity to the horse-races, and nearly half of the population are jockeys, grooms, trainers, or stablemen. The race-course of N., owned partly by the Jockey Club and partly by the Duke of Rutland, is said to be the finest in the world, and the training-ground bears a similar character for excellence. There are seven race-meetings held here annually. See Horse-racing. Pop. 10,700.

NEW MECKLENBURG, the name given to New Ireland (q.v.), in the Bismark Archipelago, since the establishment of the German Protectorate in 1884.

NEW MEXICO, *nū mĕks-ĭ-kō:* a territory of the United States, within the limits of the region ceded by Mexico 1848 under the treaty of Guadalupe Hidalgo, and of the Gadsden purchase (s. of the Gila river) 1853, Dec. 30. As organized 1850, Sep. 9, the territory included the present New Mexico, and Arizona n. of the Gila river, with the s.e. point of Nevada, and about 14,000 sq. m. now a part of Colorado. To this the Gadsden purchase added the strip between the Gila river and the present Mexican boundary. Since then the area has been reduced more than half, by the loss of the part between 37° and 38° n. lat., and e. of the Rocky Mountains, set off to Colorado 1861, Feb. 28; and Arizona, including the s.e. point of Nev., set off 1863, Feb. 24.

Location and Area.—New Mexico is in the s.w. of the United States; lat. 31°20′—37° n., long. 103°—109° w.; bounded n. by Colo., w. by Ariz., s. by Mexico and a westward extension of Tex., e. mainly by Tex.; width from e. to w. 335 m.; length of e. border 345 m., of w. border 390 m.; 122,460 sq. m. (78,374,400 acres); elevation above sea-level 3,000 to 13,150 ft.; cap. Santa Fé.

Topography.—The general surface of New Mexico is that of a plateau, 6,000 to 6,500 ft. above the sea at the n. border, sloping toward the s. to about 3,000 ft. above the sea at the s. border, and crossed from n. to s. by the chief river of the terr., the Rio Grande, and by mountain ranges, between which lie the broad valleys fitted by nature for farms and vineyards. The Rocky Mountains enter from the n. upon this plateau in two ranges, having the valley of the Rio Grande between them: (1) the main range, e. of the valley of the Rio Grande, and extending s. about half-way to the centre of the terr., a line of lofty peaks connected continuously by high ridges, until its abrupt ending a little s.e. of Santa Fé; (2) a western range consisting of many detached mountains, between which the connecting ridges are low, affording numerous passes. This w. range is known as the Sierra Madre, beginning from the very conspicuous San Antonio Mountain, near the s. line of Colorado, and ending with the Florida Mountains, which extend into Mexico. The more northern peaks of this range rise to 10,000 and 12,000 ft. above sea-level: Mt. Taylor, s.w. of Santa Fé, stands 7,500 ft. above the valley of the Rio Grande; but generally the summits of the range are 6,000 to 8,000 ft. above sea-level. In the main range, which brings the principal line of the Rocky Mountains to an end near Santa Fé, the great peaks are 12,000 to over 13,000 ft. above sea-level. An eastward spur of this range, under which the railroad entering New Mexico from the n. passes through a tunnel, forms the Raton Mountains, a pass over which is 7,893 ft. above sea-level. From a point a little s. of Santa Fé, a broken range of mountains extends down the e. side of the Rio Grande valley, to the s. border, and thence into Mexico. To the e. of this range, a grand table-land, on which are many minor ranges of mountains, extends

Area in Square Miles, 122,580. Population, 195,310.

Number of Counties, 25. Capital of State, Santa Fe

NEW MEXICO

across to the valley of the Pecos, a river which rises from head-streams 30 m. n.e. of Santa Fé, and takes a long course s. into Texas, and finally into the Rio Grande. To the e. of the Pecos, the general surface, up and down the whole of the e. side of the state, slopes toward the Mississippi, as well as toward the Gulf of Mexico. The s. half of this slope is the w. part of a region extending far into Texas—the great Llano Estacado or Staked Plain, which is treeless and has no vegetation except just after rain, which rarely falls to any extent. The n. half of this slope has a system of streams, chiefly the upper course of the Canadian river and its many tributaries. West of the Sierra Madre, near the Arizona border, occur detached ranges forming part of the divide from which the waters flow w. to the Pacific and e. or s.e. to the Rio Grande and the Gulf of Mexico. Among these mountains run great cañons, through which the streams pass, and many examples occur of the *mesas* or table-lands, which stand apart, separated by cañons and appearing like vast fortresses or castles. The valley of the Rio Grande and that of the Pecos both show many tributaries of these streams, and form vast belts of valuable agricultural or grazing land. Among the mountains occur many parks of great natural beauty and fertility. The n.w. of the state, watered by the Rio San Juan, which flows to the Colorado, is called the San Juan country. In the central w. are the head-waters of the Little Colorado; and in the s.w. those of the Gila, which flows across Arizona to the Colorado.

Climate.—The delightful and healthful air of New Mexico has given it repute as a sanitarium. During the year 1888, Sept.—1889, Aug., the thermometer showed a mean temperature from 24° in Jan. to 70° in July and Aug., the extremes being 1° below zero and 90° above. The rainy season begins about the middle of July, and continues through Aug. The average rainfall, during 1874-89, at Santa Fé has been 5⅔ in. in the two months named, and 15 to 17 in. for the year at points in the n., the w., the s.w., and the s.e. The inhabitable mountain regions, 5,000 to 10,000 ft. above sea-level, afford a summer climate equalled by but few regions; while in the s. parts, at an average elevation of 3,500 ft., the air is mild and pleasant for winter residence. A few hours' ride gives the change from the summer heat of the valleys to the healthful air of the mountains. In summer even the heat of the day is not extreme, and the nights are always cool and invigorating. At all seasons of the year rains are much more frequent in the mountains than in the valleys, and the mildness of the climate combines with this to make mountain agriculture practicable and profitable. Attention is now being given to planting of trees where timber is lacking. The extensive and heavily timbered forests in some parts of New Mexico, comprising fully 2,000 sq. m. of fine timber, have been cut to a large extent within the last

20 years; and the necessity of saving at least a part of these forests in order to protect the water supply, has caused a large number of extensive forest reserves to be created by the national government. The largest of these are the Pecos Reserve, situated between Santa Fé and Las Vegas; the Jemez Reserve, which covers much of the northwestern section of the territory; the Gila Reserve in the s.w., and the Lincoln Reserve between the Rio Grande and the Pecos, s. of the central region. The Pecos Reserve contains 430,880 acres; the Jemez, 1,237,205; the Gila, 2,823,900; the Lincoln, 545,256, and the various small reserves, an aggregate of about 1,000,000. The quantity of pine, in nearly all the hilly and mountainous parts, was originally very large; and spruce, cedar, and other evergreens are abundant. The piñon or nut-pine extensively clothes the foot-hills, cottonwoods, aspens and sycamores form belts along the rivers, and in the s. are many groves of oak and walnut, also some ash and maples. Among the natural plants of New Mexico are different varieties of the yucca, growing everywhere on the plains; and one of these, *Y. filamentosa*, called amole or soap-weed, has a fibre useful for rope-making, and the smaller kinds for paper-making, while the root gives an excellent substitute for soap. The cañaigre also, which has valuable tanning properties, occurs in great abundance.

Geology.—The central plateau of New Mexico, between the Rio Grande and the Pecos, rests for the most part on tertiary and lower cretaceous rocks. The mountains on it are composed chiefly of syenite rocks, the upheaval of which has broken through paleozoic sandstones and carboniferous limestones. The limestones sometimes occur on the summits, but more commonly on the flanks of the ridges. A characteristic feature of New Mexico is seen in the *mesas* or table-elevations formed by the sandstones. In many places a cover of extensive layers of lava is spread over the sandstone strata. Deep cañons are formed by the cutting through of the sandstones by the streams, which now flow through these cuts, betweeen perpendicular walls, which in the cañon of the Rio Grande w. of Taos are over 1,000 ft. in height. Beds of gypsum and variegated marls are exposed in many places, and very frequently beds of lignite and bituminous coal, alternating with layers of iron ore, fire-clay, and shales, the latter often filled with large fossil leaves. Dikes of porphyry are common; and where the eruptions and overflows have acted upon coal formations, as in the vicinity of Cerrilos, anthracite of the best quality is found. Hot and mineral springs are frequent; and numerous salt lakes—in the region, especially, s. of Santa Fé and between the Rio Grande and the Pecos—supply abundance of salt for both New Mexico and the n. of Mexico, adjacent.

New Mexico contains practically inexhaustible stores of all the precious and useful metals, from gold to iron, and especially extensive deposits of anthracite, lignite,

and bituminous coal, the measures aggregating fully 4,000 sq. m. of at least 10-ft. veins of coal. The richest mining district is the Cerillos, equal to about 50 m. square, and embracing s. Santa Fé and e. Bernalillo cos. The deposits are gold, silver, lead, copper, and iron: the notable Big Copper mine, which was closed some years since by litigation, is now worked again. The early Spanish colonists worked silver mines in this district, the drifts, tunnels, and shafts of which have been found, although the openings to them have been filled up and obliterated since the Pueblo Indian insurrection 1680, in which so many of the Spanish were slaughtered or driven away, and in later years permitted to return only on condition that the mines should never again be worked. The Moreno gold-fields of the e. slope of the Rocky Mountains, in Colfax co. n.e. from Santa Fé, those of the Pinos Altos district, in Grant co. in the s.w., and those of several ranges in Lincoln co., Socorro co., Rio Arriba and Taos cos., are other notable mines awaiting development. Lack of water, of settled business conditions, and of capital, has delayed operations which will ultimately yield incalculable wealth. The total value of the gold, silver, copper, lead, and zinc produced is roughly $3,000,000; and of coal $2,279,940. Adding the iron product and miscellaneous minerals made the aggregate over $5,000,000. The silver is as yet little developed, though more than half the counties of New Mexico contain vast stores yet to be mined; the copper mines are of immense richness; there is as much lead as in any lead regions anywhere, and as much iron of the best quality as in any iron districts; and not only an unlimited quantity of coal, but the only perfect anthracite w. of Penn. Zinc, manganese, and quicksilver are found; and marbles of rare quality, mica, cement, gypsum, and fire-clay in inexhaustible amount.

Zoology.—The animals native to New Mexico are the elk, antelope, deer, mountain sheep, bear, cougar, wolf, lynx, coyote, ocelot, hare, squirrel, weasel, beaver, with wild turkeys, geese, ducks, prairie-hens, and sage-hens.

The following facts have reference to N. M. at the time of its admission to Statehood:

Agriculture.—Irrigation is beginning to rejuvenate the lands of N. M. This work is already well started and it has been estimated that when the irrigation system now planned is completed there will be fully 60,000,000 acres of tillable area. The bulk of land in the territory was natural pasture land; and stock raising, with a great system of huge ranches, was therefore an early result of development of the territory under U. S. control. Stock raising was at all times an important industry in the territory. A natural product of N. M. of great value to stock has been the variety of nutritious grasses covering the valleys, table-lands, and foothills. The best of these is mezquite, or grama grass, while alfalfa has come into extensive cultivation for food for stock. The availability of the irrigated lands to

fruit and vine culture promises to put this industry above all others, especially in the Rio Grande and Pecos valleys; while other valleys, such as the Taos and Mora, are equally fine for wheat. The mountain farms are favorable only to potatoes; but onions, beets, cabbages, turnips, cauliflowers, and other vegetables everywhere return large crops. The wool clip is also important, amounting to about 25,000,000 pounds annually.

Manufactures.—Hardly any development of manufacturing industry has been made as yet beyond that of flouring and grist mills, sawmills, planing mills, quartz mills to some extent, and the minor forms of manufacture required by settled communities. Altogether there are about 500 manufactories in N. M., with total products amounting to something over $6,000,000.

Mineral Resources.—The mining industry is important. Gold, silver, copper, lead, and zinc are extensively mined. Coal is also an important product, the coal-bearing formations aggregating 1,850,000 acres, of which about one-half is now productive. In smaller quantities are also found iron, salt, gypsum, clay, soda, ochre, potash, mica, marble, molybdenum, tungsten, vanadium, turquoise, garnets, opals, chalcedony. Mineral springs are abundant.

Finance and Banking.—The total assessed valuation of property, including both personal and realty, is $62,860,852, the tax rate $11 per $1,000, and the bonded debt $998,000. There are over 30 national and over 20 State banks.

Education.—N. M. spends about $500,000 in the maintenance of its public schools, in which there are over 40,000 pupils enrolled, with about 1,100 teachers. There are also many Indian training schools, besides the University of N. M., a college of agriculture, a school of mines, a military institute, and a normal university. The educational facilities of the Territory have increased tremendously within the last 20 years, and the educational standard has become proportionately higher in all sections. Libraries are likewise receiving constantly increasing attention. At present there are over 20 public, society and school libraries, having 1,000 volumes or more, aggregating well over 30,000 volumes.

Religion.—In the religious population Roman Catholics largely predominate. Other denominations which are strongly represented are the Baptists, Methodists, Presbyterians, and Jewish. Practically all the religious bodies in N. M. maintain many schools, together with some charities. The Roman Catholic Church had within the Territory an archbishop, a bishop, a vicar-general, about 20 regular priests, about 50 secular priests, about 50 churches, nearly 350 mission churches, 6 academies for young women, a college, about 10 parochial schools, 2 Indian boarding schools, with over 300 pupils, and 2 academies for boys. The Baptists maintained nearly 50 churches, a college, and several mission schools, the

Methodists about 20 English-speaking congregations, together with a number of Spanish-speaking congregations and several mission schools; the Presbyterians nearly 50 congregations, besides about 30 preaching stations, and 25 mission schools, with over 50 teachers and approximately 1,750 pupils; the Episcopalians about 20 congregations, with a great number of sub-stations; the Mormons 2 churches, with over 300 members. The other Protestant denominations in the Territory had about 25 congregations altogether, besides which there were 5 Hebrew organizations supporting 2 synagogues.

Railroads.—The total railroad mileage of N. M. is about 3,500, showing a large increase within the last decade.

Charities and Corrections.—The territory supported an asylum for the insane at Las Vegas, an asylum for the deaf and dumb at Santa Fe, an institute for the blind at Alamogordo, a miners' hospital at Raton, and a reform school at El Rito. The territorial penitentiary was at Santa Fe. The territory also gave aid to the support of many other charitable institutions, while there were Government and private sanitoria and many denominational charitable institutions. Among the latter were included a hospital and orphanage at Santa Fé and a sanitorium at Albuquerque which were supported by the Roman Catholic Sisters of Charity. The most prominent among the charitable institutions which were supported in part by the Territory three hospitals, one of which was located at Silver City, a second at Derning, and a third at Carlsbad. The Government sanitoriums are in operation at Fort Bayard and Fort Stanton. These have attained particular prominence, owing to the fact that several hundred soldiers and sailors have been sent to them from all parts of the country and have there been cured of pulmonary tuberculosis.

History.—The settlement of New Mexico by Europeans, in connection with Spanish conquest, is of a date earlier than the original planting of English colonies in Va. and Mass. The civilization, moreover, found by Spanish conquest was far beyond anything then existing within the present United States. At a time when the whole Atlantic coast and the entire valley of the Mississippi were untilled forest or prairie, roamed by savages, New Mexico was occupied by an agricultural, pastoral, and mining Aztec or Toltec people, who built cities with houses of four stories, raised cotton and wool for clothing, corn, beans, and melons for food, manufactured good flour and pottery, had towels with tasselled ends as now, used clothing the material of which was ornamented in colors, had effective weapons of war, used methods of irrigation, and cultivated the soil, with large returns in a variety of crops. The early Spanish adventurers penetrated into what is now New Mexico 1537, 39, and 40. Later Spanish explorers, 1581, called the country New Mexico, because of the very great mineral wealth they found there. In 1598 the Spanish viceroy caused Juan de Qñate to take possession, establish forts, plant

colonies and missions, open and work mines, and subject the natives at once to the religion and the service of the Spaniards. The severity of the labor in the mines, to which the natives were forced occasioned outbreaks, and finally, 1680, a successful revolution, which drove out the Spaniards, who did not recover possession again until 1693. The revolution which overthrew Spanish power in Mexico, 1821, gave freedom to New Mexico also; and it was governed as part of the Mexican republic until, 1846, a small United States force under Gen. Stephen W. Kearny captured Santa Fé, gained control of the Territory, and secured its cession to the United States 1848, under the treaty of Guadalupe Hidalgo. New Mexico Territory was organized in 1850, Sep. 9, and an extensive addition to it, known as the Gadsden Purchase, secured by a treaty of 1853, Dec. 30. The territory of Arizona was set off from it 1863, Feb. 24. New Mexico, as then constituted, adopted a state constitution and elected senators and representatives, expecting admission to the Union, in 1850, but was kept out through the compromise measures of that year. It was for a time proposed to secure the admission of New Mexico as a state under the name of Lincoln. Efforts for statehood were made 1861, 63, 66, 69-71, 72, and 73-74; and in 1875, a bill passed the house, and the senate also, but with amendments in the latter which failed to obtain the concurrence of the house. In 1876 a bill passed the senate, and was reported favorably in the house, but not acted on. From that time to the present, scarcely a year has passed without an earnest effort for admission, and in nearly every congress an enabling act has passed one house or the other, but without concurrent action. At a convention at Santa Fé 1889, Sep. 3-25, a constitution for a state of New Mexico was framed, to be submitted to popular vote 1890, Oct. 7. This was defeated by a vote of 16,180 to 7,493 on local political grounds. In 1906, the question of admission in connection with Arizona was submitted under an act of congress, and although the union was unpopular, yet the desire for self-government in any form produced an affirmative vote of 26,195, against 14,735 in the negative. However, as Arizona voted "No," there was no result. Finally, however, on June 20, 1910, provisions for the admission of N. M. and Arizona into the Union received the approval of Congress. The act authorized the qualified electors of the Territory of N. M. to choose delegates to a constitutional convention. These delegates are to draw up a State constitution which is to be submitted to the people for ratification.

Government.—The act creating New Mexico a territory, 1850, Sep. 9, provided that the president of the United States, should appoint, for four years, a governor at a salary of $1,500, to act also as superintendent of Indian affairs, with $1,000 additional salary; a secretary at $1,800 salary (to be acting governor in case of

CAPITOL AT SANTA FÉ.

necessity); attorney at $250, marshal at $200 and fees, and three justices of the supreme court at $1,800 each. A legislature was authorized, consisting of a council of 13 elected for 2 years, and a house of 26 elected for one year, to hold annual sessions of 40 days—no act to be valid until submitted to cong. and approved. A delegate to each cong. was to be elected by the people. The justices of the supreme court were each to reside and hold district court in one of the three districts assigned them, and the whole court to hold an annual session at the capital. Lower executive or judicial offices were filled either by election or appointment.

By various changes subsequently made, the governor now receives $3,500, the judges $3,000 besides an additional allowance from the legislature, the secretary $2,500 besides fees, and the United States attorney $4,000. There are also a surveyor-general, collector of internal revenue, a marshal and two assistant United States attorneys. The legislature now consists of twelve members of the council and twenty-four of the house. Of territorial officers there are the attorney-general, six district attorneys and court clerks, auditor, treasurer, superintendent of penitentiary, superintendent of public instruction, librarian, commissioner of public lands, adjutant-general, travelling auditor, game warden, superintendent of insurance, coal oil inspector and irrigation engineer, besides 29 boards with a membership varying from three to seven.

The successive governors of the territory, with their terms of service, have been: James S. Calhoun 1851-2; Wm. Carr Lane 1852-3; David Meriwether 1853-57; Abraham Rencher 1857-61; Henry Conolly 1861-65; Robert B. Mitchell 1865-67; W. F. M. Arny (acting) 1867-69; Wm. A. Pile 1869-71; Marsh Giddings 1871-76; Samuel B. Axtell 1876-78; Lewis Wallace 1878-81; Lionel A. Sheldon 1881-85; E. G. Ross 1885-88; L. B. Prince 1888-93; W. T. Thornton 1893-97; M. A. Otero 1897-06; H. J. Hagerman 1906-07; George Currey 1907-9; William J. Mills, 1909—.

Counties, Cities, and Towns.—New Mexico had (1900) 26 counties. In 1900 the most populous *counties* were: San Miguel 22,930; Bernalillo 23,606; Chaves 16,850; Santa Fe 14,770; Rio Arriba 16,719; Mora 12,611; Taos 12,008; Grant 14,813; Socorro 14,761; Doña Aña 12,893; and Colfax 16,460; *cities and towns:* Santa Fe 5,072; Albuquerque 11,020; Las Vegas, 2,406; E. Las Vegas 2,312; Silver City 2,735.

Indians.—There are 19 towns of the Pueblos, with a Pueblo agency at Santa Fé. These people have been industrious, moral, and orderly for 350 years, owning their lands and homes. The Navajos living on a reservation, number 21,000, and own horses 250,000, sheep 700,000, goats 200,000, cattle 5,000, burros 1,000, and mules 500. The whole number of Pueblo Indians has not varied much in the last 100 years from 9,000 to 11,000.

Population.—(1850) 61,547; (1860) 80,567; (1870) 95,573; (1880) 109,793; (1890) 153,593; (1900) 195,310; (1910) 327,396.

NEW MEXICO COLLEGE OF AGRICULTURE AND MECHANIC ARTS: opened in 1891, at Mesilla Park. It does not share in the United States land grant of 1862, but receives the annual appropriation from the Federal government provided for in the law of 1890, and also receives annually an appropriation from the Territory; the total income in 1902 amounted to $48,000. The regular four years' courses are general scientific, agriculture, and mechanical engineering, on completion of which the degree of B. S. is conferred. There are in addition two years' courses in agriculture and practical mechanics, a 12 weeks' course in agriculture and horticulture, a one year course in stenography and typewriting, graduate courses, and a preparatory department (five years' course). The college is coeducational, women forming about one half the number of students; there are also women on the faculty. The library contains about 10,000 volumes; the students in all departments number about 300.

NEW MEXICO, UNIVERSITY OF: situated at Albuquerque, incorporated in 1889 by the legislature of the Territory, and intended for the State University when New Mexico is admitted to the Union. It was first opened in 1892, and new departments subsequently added till the organization now includes the collegiate department (classical and scientific courses), the departments of music and art, a business school, and normal and preparatory departments. The degrees of bachelor of arts and bachelor of pedagogy are given; also master of arts and doctor of philosophy. Women are admitted on equal terms, and a cottage for their use has been built on the campus. Connected with the university is the Hadley Climatological Laboratory devoted particularly to the investigation of the effect of the dry and plateau regions of the United States upon health and disease. The income is derived largely from State appropriations; the students number about 100, and the faculty 12.

NEW MIL'FORD: Conn., town, county-seat of Litchfield county; on the Housatonic river, and on the Berkshire division of the New York, N. H. & H. railroad. It was settled in 1707 by John Noble from Westfield, Mass., and later a colony from (Old) Milford, Conn., located at New Milford. It is situated in a hilly country which has considerable good farm land; tobacco is the great specialty. The extensive water-power of the Housatonic is being utilized by means of a canal two miles long, which extends from Bulls Bridge to New Milford. The New Milford Power Company, who own the plant, will furnish electricity to towns at a considerable distance. The tobacco warehouses have over 500 employees; the wood finishing factory, 90; the hat factory, 285; upholstery works, 40 lime works, about 60. There are several

other smaller manufacturing establishments. A library and Memorial Hall for the free use of the Grand Army veterans, the town hall, the churches, and schools are all fine buildings. The educational institutions are good public schools, Ingleside School for young women, and Weantinong Schools for boys. There are three banks, with a combined capital of about $400,000. The government is administered by three selectmen chosen annually by the people. Pop. (1910) 5,010.

NEWNAN *nū'nan:* city, county-seat of Coweta County, Ga., on the Central of Georgia and the Atlanta & W. P. R. R.'s; about 38 miles south by west of Atlanta. It is in a productive agricultural region in which cotton and fruits are extensively cultivated. The principal industrial establishments are cotton mills, cottonseed-oil mills, machine shops, flour mill, tannery, fertilizer works, a large plant for manufacturing boilers, engines, presses, and mill machinery, and an ice factory. A good quality of wine is made from the grapes which grow in the vicinity, and a considerable amount of fruit is canned for foreign markets. The city owns the waterworks. Pop. (1900) 3,654; (1910) 5,548.

NEWNHAM COLLEGE, *nūn'um:* one of the four highest colleges for women in England (N. and Girton at Cambridge Univ., and Lady Margaret and Somerville halls at Oxford). It was started 1871, as a home for women residing in Cambridge to attend university lectures, offered to them by such men as Prof. Henry Sidgwick and Frederick D. Maurice, with a view to the Cambridge Higher Local examinations, or later, 1874, to the Tripos examinations, to which full admission was granted by the univ. authorities 1881, Feb. 24, but with the right to a certificate only, without the degree given to men. The original N. C. was a house in charge of Miss Clough, sister of the radical poet. After changing more than once to larger quarters, two buildings were erected, now known as the North and South halls of N. C. They stand in large grounds and are supplied with laboratories, tennis-courts, and gymnasium. The last of the two was opened 1879, in charge of Mrs. Henry Sidgwick as vice-principal of N. C., Miss Clough being principal. Miss Helen Gladstone, a daughter of the statesman, succeeded Mrs. Sidgwick 1882. A third building, the West Hall, has been erected adjoining North Hall. There is a fourth building, the Red House, which receives the overflow of students. The four buildings have rooms for 163, and some outstudents live with parents or guardians in the town, or, if past 30 years of age, choose their own lodgings. Instruction is given by five resident women lecturers, by three natural-science teachers who reside in the town, by university professors who lecture at the college, and by others whose lectures to men the women students attend. The highest university examinations are taken by the women students, and with notable success.

NEW ORLEANS.

NEW ORLEANS, *nū awr'le-anz:* city, cap. of Orleans parish, port of entry, and metropolis of La.; the twelfth city of the United States in population according to the census of 1900, popularly known as "the crescent city."

It is in lat. 29° 57′ n., long. 90° w.; greatest length w. to n.e. 22 m.; greatest breadth, n.e. peninsula, 10 m.; on both sides the Mississippi river, but mainly on the e. bank, 107 m. above the delta at the Gulf of Mexico; statutory area 187 sq. m., drainage district 60 sq. m.; has St. Bernard parish, 4 m. s. of its centre, for s. boundary; Carrollton parish, 6½ m. n. of its centre, for n. boundary; and extends back 5 m. to Lake Pontchartrain. It is built on the alluvial bank of the river; slopes from the river to a marshy tract in the rear; is wholly below high-water level; and is protected from river overflows by a levee 15 ft. wide and 4 ft. high, erected along the bank as far as the lake, and from lake backwater by a lake-front levee. The city is divided into two parts by Canal street—the old or French and the new or American; and as it occupies an S-shaped bend 10 m. long, on the n. side of the river, the streets have been laid out to conform for the most part to this bend. Those running parallel to the river and to each other present unbroken views from the lower to the upper limits of the city, while those at right angles to them extend from the river toward the lake, following the bend. In general, the streets are narrow, seldom exceeding 40 ft. in width; but there are many beautiful boulevards, averaging 210 ft. in width, in both parts, such as Canal, Claiborne, Rampart, Esplanade, and St. Charles. It has about 700 miles of streets of which 205 miles are paved. Two popular drives of shell-road extend to Lake Pontchartrain and Carrollton.

The climate is never extreme; the temperature averages 69° F., and frost is seldom seen. The annual mean rainfall is 57 in.; mean annual height of barometer 30·075 in.; average maximum temperature 90·31°, average minimum 48·62°. The liability of epidemics of yellow fever, now lessening annually, induces many not natives nor old residents to leave the city during July, Aug., Sep., and Oct.; but considering the character of the ground and the neighboring marshes, the climate is both agreeable and healthful—indeed, its average healthfulness compares favorably with that of other American cities.

The most notable building is the U. S. Custom-house, the largest public building in the United States, excepting the capitol and treasury building at Washington. It is on Canal and Custom-house streets and Old and New Levee streets, is of Quincy (Mass.) granite, was begun 1848, and covers nearly 83,000 sq. ft. Then follow the branch of the U. S. Mint, on Esplanade and Old Levee streets, from a window of which, under the front portico of the main building, Gen. Butler had Mumford hung 1862; the City Hall, on St. Charles and Lafayette streets, an artistic Ionic structure of white marble; the venera-

NEW ORLEANS HARBOR IN 1861.

ble Tusco-Doric court-houses in Jackson square, on each side the Cathedral of St. Louis (Rom. Cath.), which has a lofty steeple, two towers, each with a smaller steeple, and was begun 1792, completed 1794, and enlarged 1850; the Merchants' Exchange, a marble structure on Royal street; costly and imposing Masonic and Odd Fellows' halls; St. Patrick's Hall, whose concert-room seats 3,500 people; Hotel Royal, formerly the St. Louis Hotel, and for some years prior to 1874 the State-house; Exposition Hall, on St. Charles street; Mechanics' Institute, Dryades street; Sugar Exchange, on the levee at foot of Bienville street; Produce Exchange, Magazine street; new Cotton Exchange; Howard Memorial Library, erected by Miss Annie Howard in memory of her father; Sophie Newcombe Memorial College, erected by Mrs. Newcombe in memory of her daughter; Sophie C. Hart Day Nursery, endowed by W. O. Hart in memory of his deceased wife; the noted Charity Hospital; U. S. Marine Hospital; the Hôtel Dieu; French Opera-house; Acad. of Music; St. Charles, National, and Varieties theatres; and the attractive and picturesque French Market, on the levee near Jackson square. There are 17 public squares and parks. The largest, City Park, comprises 150 acres in the n.e. part of the city, is tastefully laid out, and was the scene of the World's Fair and Cotton Exposition 1884–5. Jackson square, on the river-front, a popular resort, contains an equestrian statue of Andrew Jackson; Lafayette square contains a marble statue of Benjamin Franklin; Beauregard and Annunciation squares and Lee (formerly Tivoli) circle are attractive spots; and so also is Canal street between St. Charles and Royal streets, in the vicinity of the bronze statue of Henry Clay. The cemeteries are worthy of a stranger's notice from their peculiar arrangement, the semi-fluid soil preventing earth interments, and requiring all tombs to be placed above-ground. In and near the city are 33 cemeteries in all, of which Cypress Grove, Greenwood, and St. Louis No. 1 are the most notable.

In 1880 there were 915 manufacturing establishments, employing 9,504 hands, using capital $8,565,303, paying wages $3,717,557, using materials valued at $10,771,892, and yielding products valued at $18,808,096. The chief industry according to capital employed was cotton-compressing, which had 19 establishments, employed capital $2,135,000, paid wages $399,780, materials $105,788, and received $747,500 for products. Next was the manufacture of cotton-seed oil and cake, which had 7 establishments, employed capital $785,500, paid wages $275,165, materials $1,630,150, and received $2,751,150 for products. Then followed foundry and machine-shop products, 22 establishments, capital $738,375, wages $405,745, materials $596,800, products $1,228,300; refined sugar and molasses, 4 establishments, capital $385,000, wages $50-000, materials $1,340,000, products $1,483,000; tobacco—chewing, smoking, and snuff—8 establishments, capital $348,000, wages $70,540, materials $242,100, products

$424,085; and rice cleaning and polishing, 6 establishments, capital $225,000, wages $56,040, materials $1,328,387, products $1,573,281. In 1889 there were 2,298 manufacturing establishments, employing 24,297 hands, and yielding products valued at $44,328,000. The chief industries were: sugar and molasses refining, capital $8,222,000; men's clothing $2,962,000; rice cleaning and polishing $2,923,000; cotton-seed oil $2,284,000; boots and shoes $2,250,000; malt liquors $1,852,000; foundry products $1,781,000; women's clothing $1,728,000; and carpenter-work $1,622,000. The tobacco industry had doubled 1888, and showed 188 establishments, and products—33,120,667 cigars, 33,888,245 cigarettes, 1,683,638 lbs. of manufactured tobacco, 141,916 lbs. of perique, and 37,824 lbs. of snuff. N. O. is the first cotton market in the United States, and, after Liverpool, the first in the world. In 1900 there were reported 1,524 manufacturing establishments employing $46,003,604 capital and 19,435 persons; paying $7,645,167 for wages and $43,361,525 for materials used, and yielding products valued at $63,514,505.

The large commerce of N. O. is promoted by trunk and other lines of railroad, and by ocean steam-ships and sailing-vessels connecting the city with the principal American and European ports. The harbor of N. O. is the focus of 100 navigable rivers and of nearly 25,000 m. of navigable channel. A change which wrought great benefit to the commerce of the port was effected in 1901, when the wharves came under municipal control, were greatly improved, and a notable deduction made in the port charges from the schedule under the lease system to private companies. The trade with Mexico and the W. Indies for domestic transshipment is very large and annually increasing. The total exports in recent years average annually $152,776,600 and include unmanufactured cotton, corn, wheat, oil-cake and meal, cotton seed oil, unmanufactured tobacco, and mules. The imports of corn, bullion and domestic commodities average annually about $20,462,300, an aggregate of 1220 vessels of over 1,675,000 tons enter the port annually, and about 1200 of 1,720,000 tons clear.

The trunk-lines of railroad entering the city, and forming unbroken connections with the Atlantic and Pacific coasts and the manufacturing cities of the n. states, are the Chicago St. Louis and New Orleans, the Southern Pacific, the Texas Pacific, the Louisville and Nashville, the Cincinnati New Orleans and Texas Pacific, and the Louisville New Orleans and Texas.

There are numerous churches in the city, divided denominationally among: Bapt.; Rom. Cath.; Meth. Episc.; Presb.; Meth. Episc., South; Prot. Episc.; Lutheran; Evang. Prot.; Hebrew; Congl.; Christian; Greek; and Unitarian. The most noted church edifices after the Rom. Cath. Cathedral are the First Presb. (Greco-Doric), Temple Sinai, Church of the Immaculate Conception (Jesuit,

THE BATTLE OF NEW ORLEANS.

Moorish), St. Patrick's (Rom. Cath., Gothic), Trinity and St. Paul's (Prot. Episc., the second Gothic), and McGhee Church (Meth. Episc., South). The Roman Cath. abp. has his palace in the former Ursuline convent, erected 1787.

The educational features of N. O. comprise a public-school system of grammar schools and high schools; numerous private and denominational schools, academies, and colleges; and a univ. system that includes the Tulane Univ. of La., founded by the late Paul Tulane, with academical, legal, and medical departments, the New Orleans Univ., the Southern Univ. (state), Leland Univ., and Straight Univ., exclusively for colored students and with legal department. The net public debt of the city 1905, Jan. 1, was $19,307,297. The assessed valuation amounted to $170,583,374, of which $116,182,256 was real estate and $54,401,374 was personal property, and the tax rate was $29.00 per $1,000. On 1906, Sept. 4, thre were 6 national banks (cap. $5,625,000, deposits $17,852,631.29), and 17 state and savings banks and trust companies (cap. $9,115,840, deposits $38,150,618.61). The exchanges at the U. S. clearing house in the year ending 1905, Sept. 30, were $953,995,496.

There are several lines of street railroads; large hotels; nearly a dozen noted restaurants; French *cafés* in nearly every block of the old quarter; more than 20 social clubs, of which the Boston, Jockey, Pickwick, Shakespeare, and Social are the most widely known; an electric lighting system more extensive than that of any other American city of its size; a system of public baths on a large scale, introduced in the summer 1890; daily, weekly, and monthly publications; more than 60 asylums, hospitals, and other similar institutions, supported by the city, by various religious denominations, by popular subscription, and by endowment. The defenses are Forts Jackson and St. Philip, 83 m. below the city, Forts Pike, Macomb, and Wood, none of which, however, would be of much use in warfare of the present day.

Historically N. O. dates from 1717, when De la Tour surveyed its site. In the following year a settlement was made under Gov. Bienville, and a levee and rampart built on the river-front. The plat was less than 1 m. sq., the cathedral was erected in the front centre facing the river, and streets were laid out at right angles to each other. The levee proved insufficient to prevent overflows, the settlers suffered severely from storms and marsh-fever, and the attempt to found a city was soon abandoned. In 1723 another settlement was made by the French, who held the place till 1729, when the Spanish gained possession. The first epidemic of yellow fever occurred 1769; the French resumed possession 1801; and the city with the entire province of La. was bought by the U. S.

govt. 1803. In 1804 N. O. was incorporated as a city, and 1868–74 was the capital of the state. 1815, Jan. 8, Gen. Andrew Jackson (q.v.) defeated the British in a memorable engagement, and 1862, Apr. 24, Admiral David G. Farragut (q.v.) captured the city from the Confederate forces; and Gen. Benjamin F. Butler (q.v.) was placed in military command. During reconstruction days the city was frequently in turmoil and under arms, rival political parties attacked each other, and U. S. troops were marched into the city to quell the disturbances. Telegraph communication with the city was established 1847; and the work of deepening the South Pass of the river-mouth (see EADS, JAMES BUCHANAN), by which N. O. gained more depth of water than any other port on the gulf, was completed 1879. In 1884–5 a world's industrial and cotton centennial exposition, organized under an act of congress, was held in the City Park, and was visited by nearly 2,000,000 people. In 1891, diplomatic exchanges took place between the U. S. and Italian govts. over the lynching by a mob of nine Italians, who as members of the Mafia, were implicated in the murder of D. C. Hennessey, chief of police, but acquitted by the courts. Since 1899 a modern system of sewerage and sanitation has been constructed, and measures taken to prevent a recurrence of yellow and other endemic fevers. The Federal govt. has also constructed at N. O. one of the largest floating drydocks in the world, able to lift and sustain the largest ship in the American navy. Since 1827, the day preceding the first day of Lent, or Ash Wednesday, has been observed as a general and legal holiday; and the Mardi Gras (Fat Tuesday) festival, when Rex holds high carnival in the daytime, and (since 1857) the 'Mystick Krewe of Comus' give their grand tableaux at night, attracts thousands of spectators from all parts of the country and calls every wandering citizen home.

The population varies with the seasons; 25,000 to 30,000 people leave the city during the summer, and probably 50,000 not residents in summer spend their winters there. Pop. (1900) 287,104; (1910) 339,075.

NEW OR'LEANS MOSS, OR OLD MAN'S BEARD, OR LONG BEARD: see BROMELIACEÆ.

NEW PHILADELPHIA, city, cap. of Tuscarawas co., O.: on Tuscarawas river, and the Lake Shore and Tuscarawas Valley and the Marietta Pittsburg and Cleveland railroads, also a terminus of the Tuscarawas branch of the Cleveland and Pittsburg railroad. It manufactures machinery, lumber, and wool. Pop. (1900) 6,213; (1910) 8,542.

NEW PLA'TONISTS, see NEO-PLATONISM.

NEWPORT, *nū'pōrt:* city, cap. of Campbell co., Ky.; on the s. bank of the Ohio river, which separates it from Cincinnati, at the mouth of the Licking river, which divides it from Covington, and on the Louisville and Nashville, and the Elizabethtown and Big Sandy railroads. A suspension bridge, upon which a street railroad track is laid, spans the Licking river to Covington, and there is a magnificent railroad bridge across the Ohio to Cincinnati, with carriage and foot ways, which has a span 420 ft. in length. Connection with Cincinnati is made by a street railroad passing over the bridge, and street cars run to Dayton, Covington and other suburbs, including the picturesque route to St. Thomas, a govt. hill station a few miles distant. N. has many fine churches, good graded schools, public libraries, is lighted with gas, has a fine park, abundant supply of water, organized fire department, and a fire-alarm telegraph. Among fine public buildings are the post-office, Masonic Temple, and courthouse. The courts are held alternately in N, and in Alexandria. The manufactures include a watch-case factory in which 1,000 hands are employed, extensive steel works, iron-rolling mills, iron pipe foundry, stove works, bolt factory, flour and lumber mills, and tile works. The first settlement at N. was in 1791. Pop.(1910) 30,309.

NEW'PORT: city, cap. of Newport co., and formerly one of the capitals of R. I.; lat. 41° 29′ n., long. 70° 19′ 12″ w.; on the w. side of the island of Rhode Island in Narragansett Bay, about 5 m. from the sea, 23 m. s.e. of Providence, with which it is connected by a line of steamers. The Old Colony road furnishes rail communication with Boston, and superb steamers of that company connect it with New York, while the line of the Newport and Wickford Railroad and Steamboat Company connects the city with the roads along the shore. The harbor—one of the best on the Atlantic coast—is large, deep and easy of access. On one of the islands in the harbor the national govt. has established a torpedo station; and the Naval War College, a govt. institution, is on Coaster's Harbor Island, near by. N. ranks among the most fashionable residential seaside resorts in the U. S., and is a great yachting and pleasure centre. There are numerous fine churches, the denominations represented including, Prot. Episc.; Bapt.; Meth. Episc.; Rom. Cath.; Congl.; Presb.; Unitarian; Friends; Swedish, and Hebrew. The Friends have held annual meetings i N. for nearly three centuries. It has an excellent graded school system, and the Rogers High School, endowed by William Sanford Rogers with $100,000, is one of the best in the country. There are also numerous private schools, libraries, a valuable collection in the Newport Historical Society building, national, state, coöperative and other banks, weekly and daily

periodicals. One of the newspapers, the *Mercury*, was established 1758 by a nephew of Benjamin Franklin, and is said to be the oldest paper now published in this country. There is a fine park around the famous old stone mill, or Round Tower, concerning the origin and former use of which there are widely differing opinions, but now acknowledged as a 17th c. building. The fine climate, beautiful scenery, and facilities for ocean bathing have made the city one of the two or three most fashionable places for summer residence in the United States. There are many very expensive and elaborate houses with park-like and beautifully kept grounds. Land for a public park was given, 1886, by Levi P. Morton of New York (afterward vice-pres); and there are other fine public grounds. The water-works are controlled by a private corporation, there is an excellent system of sewerage to the sea; the streets are kept in fine order and are lighted with electricity; a line of street cars is operated by electricity; and there is an organized fire department. The manufactures are not extensive; but there are two cotton-mills, a brass foundry, some lead-works, and the repair shops of the Old Colony Steamboat Company; altogether employing about 150 persons. The first settlement at N. was made 1638 by a few followers of Roger Williams; and the claim, contested by Providence, is made that here was organized the first Bapt. church in the United States. A large foreign commerce was secured at an early date, but was ruined during the revolution, and has never been regained. In that war a large force of British and Hessian troops occupied the town for some time, destroyed hundreds of houses with the orchards and shade trees, and despoiled one of the finest libraries which had been collected in the colonies. The city is noted as the temporary home of Bp. Berkeley (see BERKELEY, GEORGE), and the church in which he preached is still standing. The state house was built 1742; the Redwood library building, a Doric structure, 1750; the city hall 1763. One of the Meth. Episc. churches has the first spire and bell ever placed on a church for that denomination. There is a bronze statue of Com. Matthew C. Perry, and a monument to his brother Com. Oliver H. Perry. The city has long been noted for its charitable institutions and the benefactions of its wealthy citizens. Christopher Townsend established a home for friendless children at the house in which William Ellery Channing was born, and gave it an endowment of $50,000; gave nearly $100,000, the income to be used for the benefit of aged people, and established and endowed the public library. Ellen Townsend gives $7,000 a year toward sustaining the industrial school, Russell Coggeshall gave $50,000, the income to be used for the deserving poor; and several other persons have left various bequests for similar purposes. The city hospital was endowed by private individuals, and received large bequests from John Alfred Hasard and William Littlefield. The area of the city is about

eight sq. m., its property is valued at $700,375, buildings $243,000, and its sinking fund is $32,000; assessed valuation $32,220,650; receipts $394,830; expenditures $385,673.76; public debt $208,000. The summer visitors and residents of N. number about 10,000. Permanent pop. (1870) 12,521; (1880) 15,693; (1885) 20,339; (1890) 19,457; (1900) 22,034; (1910) 27,149.

NEW'PORT: thriving market-town, parliamentary and municipal borough, and river-port of England, county of Monmouth, on the Usk, about 4 m. from its mouth, 24 m. s.s.w. of the town of Monmouth. It was anciently the port of the city of Caerleon, about three m. further up the river; but during the 19th c. it has become a shipping port of considerable importance, its situation on a deep and spacious tidal river making it the outlet for the produce of the extensive collieries, and of the growing iron and tin works of the neighborhood. It has spacious docks, manufactures nails and spikes extensively, exports iron and coal largely, and carries on an active trade. Over 6725 vessels of 2,180,000 tons enter, and about the same number clear the port annually. There is regular steam communication with Liverpool, Bristol, and Ireland. The town stands amid picturesque scenery, but in its central parts is meanly built. A curious old parish church is that of St. Woollos. The remains of N. Castle are now in part used as a brewery. Pop. (1801) 1,135; (1831) 7,062; (1851) 20,279; (1871) 27,069; (1881) 35,382; (1891) 54,695; (1901) 67,290.

NEW'PORT: municipal borough and river-port of England, in Hampshire; chief town of the Isle of Wight; near the centre of that island, on the Medina, which is navigable up to this point. St. Thomas's Church, rebuilt 1854, on the site of an ancient structure of the reign of Henry III., is a handsome edifice, and contains a monument erected by Queen Victoria in memory of Princess Elizabeth, daughter of Charles I., who died at Carisbrooke Castle, 1650. Among the educational establishments is the Free Grammar School, in which frequent meetings and negotiations between Charles I. and the Parliamentary Commissioners took place. About a mile north of N. is Carisbrooke Castle, where the king was confined under the guardianship of Col. Hammond for twelve months (1647–8). There are several important institutions in the vicinity, e.g., the Albany Barracks, the House of Industry, and the Parkhurst Prison for juvenile convicts. There is some lace manufacture. Vessels of considerable tonnage can ascend to the quay at high tides. Pop. 10,900.

NEWPORT, CHRISTOPHER: born England, about 1565. He commanded expeditions to the W. Indies; and 1606, Dec. 19, sailed from London in command of three ships which brought the first English colonists who made a permanent settlement at Jamestown, Va., where they settled 1607, May 13. He soon returned to England, and the next season brought more emigrants and needed supplies. He loaded his ships with yellow mica, which he supposed to be gold, and took it to England. He made trips to Va., 1608, 10, in the latter bringing Lord Delaware and a new colonial charter. He wrote *Discoveries in America.*

NEWPORT NEWS: former cap. of Warwick co., Va., now an independent city; on the Chesa. and O. railroad, 70 m. s.e. of Richmond, 14 m. n. of Norfolk. Its harbor is considered one of the best in the world; it has large grain-elevators and capacious wharves, and is connected with Old Point Comfort and Hampton by electric railway, has a line of freight-steamers direct to England, and an extensive ship-building plant. N. N. is said to be the fourth largest grain-shipping port in the United States. Pop. (1890) 4,449; (1900) 19,635; (1910) 20,205.

NEW PROVIDENCE, *nū prŏvĭ-dĕns:* island; one of the Bahamas; principal island of the group; lat. 25° 5′ n. and long. 77° 21′ w.; about 17 m. in length, 7 m. in breadth, and has a good harbor. The surface is but slightly varied, and there are numerous lagoons of large size. Considerable fruit is grown, including oranges, bananas and pine-apples. Sponge fishing is carried on to some extent. The principal town is Nassau, cap. of the Bahamas, near the n. coast. It is a noted winter health resort for people of the northern United States. The first settlement at N. P. was made by the English 1629. The island has been twice under the dominion of Spain, but was returned to Great Britain by the treaty of 1783. Pop. (1901) 12,534.

NEW RED SANDSTONE: former term for a large series of reddish colored loams, shales, and sandstones, occurring between the Carboniferous Rocks and the Lias; grouped together under this name, in distinction from the Old Red Sandstone group, which lies below the Coal-measures, and has a similar mineral structure. Conybeare and Buckland proposed the title Poikilitic [Gr. variegated] for the same strata, because some of the most characteristic beds are variegated with spots and streaks of light-blue, green, and buff, on a red base. In the progress of geology, however, it was found that two distinct periods were included under these names; and the contained fossils of each group were found so remarkably different that one period was referred to the Paleozoic series under the name Permian (q.v.), while the other, known as the Trias (q.v.), was assigned to the Secondary series.

NEW RICHMOND, *nū rĭch'mond:* village in Clermont co., O. It is on the Ohio and Northwestern railroad and the Ohio river, 20 m. s.e. of Cincinnati. It has several churches, town hall, weekly newspaper, and national bank. The industrial establishments include a tobacco factory, distillery, brewery, a furniture shop, saw-mills and grist-mills, a woolen factory, chair factory, and brick-yards. Pop. 2,056.

NEW ROCHELLE, *nū rō-shĕl':* city of Westchester co., N. Y. on N. R. harbor, a beautiful inlet of Long Island Sound, and on the New York, New Haven & Hartford railroad, and connected by electric railroads with New York City, 12 m. n.e. of 129th st. N. R., named after La Rochelle France, was settled by Huguenots 1687. It received a city charter in 1890. It is a favorite place of summer and permanent residence for New York business men, and has many handsome homes, and colonial mansions. There are a number of beautiful islets in the harbor, which present fine land and water views. The Ursuline Seminary of St. Teresa occupies Leland Castle and N. R. has many fine public and private schools, churches, public library, and other institutions. Trade and commerce are purely local. Pop. (1900) 14,720; (1910) 28,867.

NEW ROSS, *nū rŏs:* market-town and seaport of Leinster, Ireland, on the estuary of the Barrow, partly in the county of Kilkenny, but chiefly in the county of Wexford; 84 m. s.s.w. from Dublin. It is an ancient town, having been surrounded by walls about the middle of the 13th c. It is now a place of considerable commerce. On the Kilkenney side is a straggling suburb called Rosbercon, connected with N. R. by a metal bridge, erected at a cost of £50,137, which has a swivel-pillar in the centre, to allow vessels to pass. The port is approachable at spring-tides by ships of 800 tons, and at all times by vessels of 600 tons; and there is communication by river and canal with Dublin, and with Limerick. The harbor has undergone modern improvements. Pop. 6,000.

NEW RUSSIA: see RUSSIA.

NEWRY, *nū'rĭ:* seaport and parliamentary borough, partly in the county of Armagh, principally in the county of Down, Ireland, 63 m. n. of Dublin, 38 m. s.s. w. of Belfast, and connected with both places by a branch-railway. The town is nearly coeval with the English invasion, having grown up around a monastery founded 1183, and a castle subsequently erected by De Courcey. This castle was the scene of several struggles; and in most of the civil wars of Ulster, N. suffered severely. It is traversed by the river N., which falls into Carlingford Lough,

also by a canal which prolongs the navigation to Lough Neagh, 32 m. A commission for improving Carlingford Lough, has already spent £80,000 upon it. The town is handsomely and compactly built. The quays are lined with spacious warehouses, and there are several mills, tanyards, coach and car manufactories, and iron-foundries. Extensive water-works have recently been constructed. There are linen, cotton, and iron manufactures. The income of the port is £6,000 yearly. Steam-vessels ply to Liverpool and Glasgow from Warrenpoint, a port five m. distant, on Carlingford Lough; and the N. and Greenore railway connects the N. and Armagh line with Carlingford Lough. Pop. 12,600.

NEWS, n. sing, *nūz* [from Eng. *new*: F. *nouvelles*, new things, news]: recent intelligence; tidings. NEWS-BOY, or NEWS-MAN, one who sells or delivers newspapers. NEWS-GALLEYS, among *printers*, long frames of metal, or of metal bottoms and wooden sides, for containing columns of type, for the purpose of pulling therefrom proofs in slips. NEWSMONGER, one who employs much of his time in hearing and telling news. NEWS-VENDER, a seller of newspapers. NEWSPAPER, n. a sheet of paper printed and published daily, or at intervals, for giving intelligence of passing events (see below). NEWSPAPER AGENT, one who supplies newspapers to the public; a news-vender. NEWS-ROOM, a room where the daily papers, magazines, reviews, etc., may be read by subscribers. NEWS-WRITER, a casual reporter or contributor to a newspaper. *Note.*—In OE., *news* was employed indifferently either in a singular or plural construction. Modern usage limits it to a singular construction only.—SYN. of 'news'; tidings; information; intelligence; advice.

NEW SCHOOL PRESBYTE'RIANS: one of the two parties in the Presb. Chh. in the United States which, long traceable as diverse drifts of opinion and practice, led to the division of the church 1838. The two sects, New School and Old School, reunited 1870. See PRESBYTERIAN CHURCH IN THE United States.

NEW SHORE'HAM: see SHOREHAM.

NEW SIBERIA, *nū sī-bē'ri-a*: group of islands in the Arctic Ocean, n.n.e. of the mouth of the river Lena, in E. Siberia: lat. 73° 20′—76° 12′ n., long. 135° 20′—150° 20 e.; 20,480 sq. m. The principal are Kotelnoi (the largest), Liakov, Fadievskoi, and New Siberia. The coasts are in general rocky, and are covered all the year round with snow. The islands are very important, for the immense multitude of bones and teeth of mammoths, rhinoceroses, buffaloes, etc., found in the soil. They are now uninhabited, but there are traces of former human habitation. Neither bush nor tree is to be seen anywhere.

NEW SOUTH WALES, *wālz:* an 'original State' of Australia. Its name, given by Capt. Cook, was from some fancied resemblance of its coast-line to the s. coast of Wales. It originally comprised all the Australian settlements e. of the 135th meridian, but the formation, successively, of the separate colonies of South Australia (1836), Victoria (1851), and Queensland (1859), has reduced its dimensions. It is now bounded n. by a line which, beginning at Point Danger, lat. 28° 8′ s., follows several lines of heights across the Dividing Range till it meets the 29th parallel, which forms the rest of the boundary westward; w. by the 141st meridian; e. by the Pacific Ocean; and the line separating it from Victoria on the s. runs from Cape Howe, at the s.e. of the island, n.w. to the source of the Murray river, and along that stream, w. by n. to the w. boundary of the two colonies. Greatest length 900 m. greatest breath 850 m.; 310,700 sq. m., somewhat more than 2½ times that of Great Britain and Ireland, and more than that of any state in Europe except Russia. For the more general physical character of the country, see AUSTRALIA. Within the State of N. S. W. the mountain-range, which girdles nearly the whole island, is most continuous and elevated, and is known as the Dividing Range. The section of this mountain system on the s. boundary of the State, called the Australian Alps, rises in Mount Kosciusko to 7,308 ft. From this range extends n., the water-shed, being 30 to 120 m. from the e. coast, and thus divides the colony into two slopes, with two distinct water-systems. The rivers on the e. side descend with great rapidity, and in oblique tortuous courses, their channels often forming deep ravines. Many of them are navigable in their lower course for sea-going steamers. The principal are the Richmond, Clarence, M'Leay, Manning, Hunter, Hawkesbury, and Shoalhaven. The Hunter river, about 60 m.n. of Sydney, opens one of the most fertile and delightful districts in the country. The Dividing Range, which, opposite to Sydney, is called the Blue Mountains, being singularly abrupt and rugged, and full of frightful chasms, long presented an impenetrable barrier to the w., and kept the colonists shut in between it and the sea, ignorant of what lay beyond. At last, 1813, when the cattle were likely to perish in one of those long droughts that seem to visit this country at intervals of a dozen years, three adventurous individuals scaled the formidable barrier, and discovered those downs on the w. slope which now form the great sheep-ranges of Australia. A practicable line of road was immediately constructed by convict labor, and the tide of occupation entered on the new and limitless expanse. The numerous streams that rise on the w. side of the water-shed within the State, all converge and empty their waters into the sea through one channel within the State of S. Australia. The s. and main branch of this great river-system is the Murray. The other great trunks of the system are the Murrum-

bidgee, navigable; the Lachlan, at times reduced to a string of ponds; and the Darling. The Macquarie, passing through the rich district of Bathurst (q.v.), is a large tributary of the Darling, but it reaches it only in the rainy seasons. The coast-line from Cape Howe to Point Danger is more than 700 m. long, and presents numerous good harbors formed by the estuaries of the rivers. The great extent of the State, stretching over 11 degrees of latitude, gives a various climate. In the n. districts, which are the warmest, the climate is tropical, the summer heat rising in inland districts occasionally to 120°, while on the high table-lands, weeks of severe frost are sometimes experienced. At Sydney, the mean temperature of the year is about 65°. The mean heat of summer, which lasts here from the beginning of Dec. to the end of Feb., is about 80°, but it is much modified on the coast by the refreshing sea-breeze. The annual fall of rain is about 50 inches. Rain sometimes descends in continuous torrents, and causes the rivers to rise to an extraordinary height. Sometimes the rains almost fail for two or three years in succession (see AUSTRALIA). The coast, for 300 m. from the n. boundary, is adapted for growing cotton, and in 1868, when a large quantity was grown, the average produce was 180 lbs. per acre; but cotton-planting has long been quite abandoned. Farther s. the climate is more temperate, and is fitted to produce all the grain products of Europe. Immense tracts of land, admirably adapted for agriculture, occur in the s.w. interior; while in the s.e. coast districts, the soil is famed for richness and fertility. In the n. the cotton and tobacco plants, the vine, and sugar-cane are grown; and pine-apples, bananas, guavas, lemons, citrons, and other tropical fruits, are produced. In the cooler regions of the s. peaches, apricots, nectarines, oranges, grapes, pears, pomegranates, melons, and the fruits common in Britain and the United States are grown in perfection, and sometimes in such abundance that pigs are fed with them. Wheat, barley, oats, maize, and all the cereals and vegetables of Europe are grown.

Agriculture.—Recent statistics give 2,440,968 acres under cultivation, or about 1.86 acres to each inhabitant. The area occupied by the principal crops were: wheat 1,840,979 acres; corn, 214,697 acres; oats, 134,529 acres; barley, 8,623 acres; other cereals, 4,885 acres; lucerne and other green crops, 107,800 acres; sugar-cane, 22,517 acres; potatoes, 34,968 acres; oranges, 14,533 acres; vines, 8,278 acres; other fruits, 31,716 acres; other crops, 17,363 acres. The value of the total produce averages annually $27,910,000.

The chief product of the colony is wool, the annual exports of which are about 300,000,000 lbs., valued at $50,000,000. Sheep-farming requires large capital, skill and experience; and the sheep-farmers are the territorial aristocracy of the State. All the

best pasture-land has long been taken up and rented (for periods of 10–15 years) from the crown under certain conditions. Stations, or the right of grazing, with the stock on them, are continually advertised for sale; the price of a station is according to the number of cattle or sheep on it. The question of the rent that the 'squatters' should pay (which used to be about £10), and of the tenure by which the pasture-lands should be held, was long a source of agitation and bitterness in the colony. They now pay about a farthing a year for each sheep that the run can support. According to the present regulations, arable lands are disposed of by two distinct systems of sale: one, to the highest bidder at auction in unlimited quantities; the other, at a fixed price in limited quantities. By this last, known in the colony as 'Free Selection before Survey,' the intending cultivator can first select for himself, and then secure in fee simple, a quantity not less than 40 and not more than 320 acres, at the rate of 20s., about $4.85 per acre, on condition of residing on his farm, improving a portion of it, and not subletting it.

The coal-fields of N. S. W. are extensive, and the seams of great thickness. In 1901 were raised 5,968,426 tons, valued at £2,178,920, or about $10,894,600. Iron, lead, copper, and oil-shale are abundant. Gold was discovered here, 1851, May, and in that year gold was exported to the amount of £468,336, or about $2,276,112. This amount was increased (1852) to £2,660,946, or about $12,932,197, but subsequently, owing to the discovery of the richer diggings of Victoria, gold-mining in this state began to languish. From 1857-75 the amount annually found and exported steadily increased. 1875 the value exported was £2,094,505, or about $10,179,294, nearly all coin; 1901 the amount was 267,061 oz., valued at £921,282, or about $4,605,000. In 1895 there were in the colony 56,977,270 sheep, 2,465,411 cattle, 518,181 horses, 273,359 swine. In 1880 the revenue was £4,904,216, or about $23,834,489; the expenditure £48,54,706, or about $23,593,871; 1901, revenue £810,609, or about $4,653,000; expenditure £801,940, or about $4,009,700. Exports (1901) £27,351,124, or about $137,755,600, comprising wool, tallow, coal, hides, leather, meat preserved and frozen grain, and sovereigns; imports were £261,928,218, consisting of clothing, drapery, hardware, sugar, spirits, etc. Total revenue from import duties (1901) £1,886,568, or about $9,432,800, being 7.006 per cent. of the value of the imports. The Sydney branch of the Royal Mint was instituted 1855, and issues large quantities of gold in sovereigns and half-sovereigns. There were, 1901, 2,846 m. of govt. railway open for traffic. railway across the Blue Mountains is a triumph of engineering. Length of telegrapn line 14,272 miles of wire.

Prior to the federation, N. S. Wales was self-governed, with a governor appointed by the crown — a responsible ministry, a legislative council nominated by the crown, and a house

of assembly elected on the basis of manhood suffrage by permanent residents. The colony maintained in London its own agent-general, who communicated directly with the colonial office. As regards religion, all sects are on a footing of equality. In 1902 clergy and ministers numbered 1,217, church members 1,354,859 (not including aborigines), of whom the Church of England had 381 clergy, 623,131 members; Presb. 178 clergy, 132,617 members; Wesleyans 199 clergy, 137,638 members; Rom. Cath. 311 clergy, 347,286 members. The number of schools under the dept. of public instruction (1901) was 2,818; besides these there were 889 private schools; there were in all more than 302,000 pupils. For the higher education, see SYDNEY. The cap. is Sydney (q.v.), a splendid city, oldest and most important in all Australasia, pop. (1901) 496,990; other chief towns are Parramatta, Bathurst, Goulburn, Maitland, Newcastle, Grafton, Wollongong and Armidale, with populations from 3,000 to 17,000.

N. S. W. took its origin in a penal establishment, formed by the British government, 1788, at Port Jackson, near Botany Bay (latitude 34°). The prisoners, after their period of servitude, or on being pardoned, became settlers, and obtained grants of land. Transportation to N. S. W. ceased 1840, at which date the total number of convicts sent thither amounted to 60,700, of whom 8,700 were women. In 1833 there were 23,000 free males and 13,500 free females, to 22,000 male and 2,700 female convicts; and of the free population, above 16,000 were emancipists.

In 1870–80, N. S. W. adopted free-trade principles, a departure from the usages of all the other Australasian colonies, which its people consider justified by the development of commerce and manufacturing industry. In 1881 there were 13,857 persons, of whom 2,096 were females, employed in miscellaneous industries, wages ruling somewhat higher than in England.

There are now about 60,800 persons employed in over 3,000 manufacturing establishments, and the aggregate annual output is valued at $81,500,000.

Pop.	Males.	Females.	Total.
1850.	154,575	110,928	265,503
1861.	202,099	156,179	358,278
1871.	275,551	228,430	503,981
1881.	411,149	340,419	751,468
1891.	612,562	519,672	1,132,234
1901.	712,456	646,677	1,359,133

In 1891, Mar. 2, the national Australian convention, empowered to consider and report on an adequate scheme for a federal constitution under which Australian colonies might unite, met at Sydney. In 1895, Nov., a federal enabling act was passed by legislative assembly of N. S. W.; and on 1901, Jan. 1, the new commonwealth of Australia was proclaimed in Sydney, N. S. W., becoming one of the 'original States.'

NEWS'PAPER : periodical publication printed and distributed for circulation of news. From the broadsheet relating the most meagre intelligence without comment or inference, the N. has grown into a powerful political and social engine, diffusing information on all subjects of interest, circulating advertisements, and acting on the public mind, in times of excitement, to an extent that has led it to be called in England the fourth estate of the realm, and that in the United States has caused it to imply, if not to assert, for itself a still higher place.

The earliest approach to the N. is found in the *Acta Diurna*, or *Acta Publica*, of ancient Rome, an official gazette, which in the later times of the republic, and during the empire, appeared daily under sanction of the government. The contents of these *Acta* consisted of an enumeration of the births and deaths in Rome, an account of the money paid into the treasury, and everything relating to the supply of corn; extracts from the *Acta Forensica*, including the edicts of magistrates, the testaments of distinguished men, reports of trials, with the names of the acquitted and condemned, a list of the magistrates who were elected; extracts from the *Acta Senatus*, an account of public affairs and foreign wars, of the births, deaths, festivals, and movements of the imperial family; and, generally, news relating to public buildings, funerals, games, fires, sacrifices, and miracles, as well as amatory stories. The *Acta* seem to have been drawn up under the superintendence of censors, questors, and other magistrates, by officers called *actuarii*, assisted by clerks and notaries; and their publication consisted in posting them in some public place in the city, where they could be read by any one who pleased. They continued to be issued until the downfall of the Western Empire, but there seems never to have been anything corresponding to them at Constantinople.

The beginnings of the N. of modern Europe and America are traceable to Germany and to Venice. Soon after the invention of printing, in the latter half of the 15th c., small news-sheets, called *Relationen* and the *Newe Zeytung*, appeared in Augsburg, Vienna, Ratisbon, and Nürnberg, generally in the form of a letter. The extant numbers contain, among other matters, accounts of the discovery of America, of the conquests of the Turks, of the French and Austrian war in Italy, with such local occurrences as executions, inundations, earthquakes, burnings of witches, and child-murders committed by the Jews. More important, perhaps, were the official *Notizie Scritte*, first issued by the Venetian govt. in the 16th c., containing accounts of the wars carried on by the republic and other events of general interest. At first they were not printed, but were to be seen in various public places on payment of a small coin, called a *Gazeta*, whence the name 'Gazette.' After they were allowed by the govt. to be printed, they obtained wide circulation over the whole of Europe.

The earliest English newspapers, or news-letters, be-

long to the reign of James I., and were printed in the form of small quarto pamphlets. Some copies of a sheet, called the *English Mercury*, purporting to be published by authority of Queen Elizabeth 1588, the period of the Spanish Armada, have been proved by Mr. Watts of the British Museum to be literary forgeries, executed about 1766. The first English newspapers appeared at occasional and irregular intervals: the earliest, so far as ascertained, is entitled *News out of Holland*, and was published for M. Newbery 1619. In 1622 these occasional pamphlets were converted into the first *printed* N., entitled *The Certaine News of the Present Week*, edited by Nathaniel Butter. About the same time appeared the *London Weekly Courant*. A large number of publications, hardly deserving the name of newspapers, were circulated during the civil war in England, with such names as *England's Memorable Accidents*, *The Kingdom's Intelligencer*, *Mercurius Aulicus*, *The Scots Intelligencer*, *The Parliament's Scout*, *The Parliament's Scout's Discovery, or Certain Information*, *The Scots Dove*, *The Parliament Kite*, *The Secret Owl*, *Mercurius Mastix*, *Mercurius Democritus*, *Mercurius Acheronticus, or News from Hell*, etc. The arrangement of the news is poor in the extreme, and what few comments there are, are examples of utmost virulence. The Long Parliament subjected the N. press to a censorship, which became more strict under Charles II. The first English N. which could properly be considered a vehicle of general information was the *Public Intelligencer*, established by Sir Roger L'Estrange 1663; it was dropped on the appearance of *The London Gazette*, the first number of which was published 1665, Nov. 7, at Oxford, where the court was residing in consequence of the plague being then in London. A second paper, *The Observator*, was afterward started by L'Estrange, who, 1680, exercised his authority as licenser of the press by issuing a proclamation 'for suppressing the printing and publishing of unlicensed news-books and pamphlets of news.' Small as was the sheet, a difficulty often arose how to fill it. One publisher was in the way of supplying the dearth of news by a passage from the Bible; another announced that 'blank space is left that any gentleman may write his own private business.'

Until the reign of Queen Anne, few of the newspapers appeared oftener than once a week. From the interest excited by Marlborough's victories arose a demand for more frequent intelligence, and besides 17 newspapers published three times a week, the *Daily Courant*, established 1709, was issued every day except Sunday. Of the more noted London newspapers, the *London Daily Post and General Advertiser* was established 1726, and in 1752 became the *Public Advertiser;* a celebrity attaches to it from having been the medium in which 'Junius's Letters' first appeared. The *St. James's Chronicle* arose from an amalgamation of two papers, the *St. James's Post* and *St. James's Evening Post*, both which began 1715. The *North Briton*, edited by Wilkes, appeared first 1762.

The *Morning Chronicle*, discontinued 1862, dates from 1770; the *Morning Post*, from 1772; the now defunct *Morning Herald*, from 1781; the *Times* appeared first 1788, as a continuation of the *London Daily Universal Register*, established three years earlier.

During the reign of George III. prosecutions were rife against N. writers and editors; their result, generally, was to give greatly increased currency to the doctrines assailed, and to confer a fictitious importance on the traders in politics, by whom many of the journals were conducted. The first attempt at parliamentary reporting was resented by the house of commons as a breach of privilege, but the resolutions and the imprisonments of 1771 all ended in the tacit concession of publicity of discussion which has ever since prevailed.

The newspapers of Great Britain have, within the present c., greatly increased in size and improved in literary character. In both respects the English claim that they are far in advance of the journals of any other country. Each number of the *Times* now consists in general of 16 pages, occasionally 24, and contains more than 5,000 advertisements. The success of the *Times* is due mainly to the enterprise of its original promoter, John Walter (q.v.) (1739–1812), who first introduced various improvements in the art of printing, and made a strong effort to secure the best literary talent attainable in all departments of his journal. One of the most notable incidents in the history of the *Times* was the exposure, through means of its Paris correspondent, of a gigantic scheme of forgery planned in France 1840—a scheme which contemplated the almost simultaneous presentation, at the chief banking-houses of the continent, of forged letters of credit from Glyn and Co. The failure of the conspiracy was due mainly to the exertions of the *Times*. One of the parties implicated brought an action for libel against the printer, and obtained a verdict of one farthing damages. A public subscription was raised to defray the expenses incurred in defending the action, when the proprietors of the *Times*, declining personally to accept the sum subscribed, invested it in two *Times* scholarships in connection with Christ's Hospital and the City of London School, for the benefit of pupils proceeding thence to Oxford or Cambridge.

Somewhat in contrast with the above report of the success of the London *Times* in discovering a forgery of importance, it is proper to adduce an incident in recent history in which the London *Times* was the victim of a series of forgeries. During the latter part of 1888 and the beginning of 1889 was tried before a parliamentary commission the case of 'O'Donnell *versus* Walter and another,' which was, in fact, that of Charles Stuart Parnell against the London *Times*, for libel in connection with the publication of a series of articles entitled 'Parnellism and Crime,' in which an effort was made to show a connection between Mr. Parnell and the Phœnix Park murders, and generally with the dynamite and other out-

rages charged against agents of the Irish nationalist party. During this trial, there was brought into court, in evidence, a series of seven letters alleged to have been written by Mr. Parnell, and which, taken as they stood, were of an inculpating character. Four of these letters were dated 1882: three were without date. They all were brief, and in a handwriting which certainly greatly resembled that of Mr. Parnell. These letters had been obtained by the editor of the *Times* from Mr. Edward C. Houston, who had received from the *Times* sums of money amounting in all to nearly £3,000, but of which sum, as was sworn, no particular amount was given for the inculpatory letters. These letters were obtained—from some source not given, according to the sworn statement—by one Richard Pigott, ex-Fenian and formerly part proprietor of the *Irishman*. Pigott was examined before the Parnell commission, and held to his original statement; but 1889, Feb., he made a written confession before Henry Labouchere, M.P., and George A. Sala, in which he stated that he had himself fabricated and forged the alleged Parnell letters, using genuine letters of Mr. Parnell in this fabrication. Pigott fled from England to Madrid, closely followed by Scotland Yard detectives, whom, however, he escaped by committing suicide at a hotel in Madrid, just at the time when a legal officer was in the hotel for the purpose of effecting his arrest. The Pigott confession practically completed the break-down of the case of the *Times;* and, so far as the forged letters were concerned, that paper published a complete acknowledgement of its error, and expressed willingness to submit to such damages as might be imposed upon it. As a fact, these disclosures destroyed the entire validity of the case before the Parnell commission, which brought in a report practically exculpating Mr. Parnell from the grave charges which the *Times* had made.

A stamp-duty on newspapers was imposed 1713 by 10 Anne, amounting to one half-penny on 'half a sheet or less,' and one penny 'if larger than half a sheet, and not exceeding a whole sheet.' The duty was raised by successive statutes, but was abolished 1855—a change which occasioned immense increase in the number of newspapers, and diminution of their price, though many of the cheap papers then started were of very brief duration. The repeal of the paper-duty, 1861, added to the number and cheapness of newspapers. The number of stamps issued on British newspapers was (1753) 7,500,000; (1800) 16,000,000; (1850) 65,741,271.

In 1843 the number of newspapers published in London was 79; (1880) about 340, of which 18 were daily and 5 evening (one of the 5 a mere reprint of the morning paper, with what news had been received during the day). Of these, the most influential since the last half of the 19th c. began has been the *Times*, established 1788, of which nearly 70,000 copies are printed daily, and a larger circulation on occasions of public interest. It professes in-

dependence in politics, though at present (1890) and in recent years its conservative interest and tone have been decided. The *Daily News*, *Pall Mall Gazette* (evening paper), *Daily Telegraph*, and *Morning Post* (organ of the *beau-monde*) are the most important liberal daily papers; the *St. James's Gazette* calls itself anti-radical; while the *Standard* and *Globe* (evening paper) are conservative.

The price of the daily London papers varies from ½*d.* to 3*d.* (from one cent to six cents). Of the 1,648 newspapers not daily, most are published once, some twice, some three times, one four times a week, some once a fortnight, and some monthly. They comprise agricultural, sporting, commercial, and railway journals; about a dozen purely literary, or literary and scientific; military and naval, musical and theatrical, legal and medical journals. There are a *Court Circular* and a *Court Journal*, a French, a German, an Anglo-American, and a Spanish weekly paper. There are a few pictorial and about half-a-dozen humorous papers. Of these last, *Punch*, which has been in existence since 1841, is ably conducted and wields much influence. A large number are the organs of particular religious sects or parties. The bakers, drapers, grocers, printers, booksellers, brewers, etc., have their respective journals; the builders have six; and there are many newspapers with a purely local circulation. The *World*, *Truth*, and *The Lady's Pictorial*, etc., are so-called 'society-papers.' The price of the weekly papers varies from 6*d.* to 1*d.* or ½*d.* (from 12 cents to one cent).

The earliest English provincial N. is believed to be the *Norwich Postman*, published 1706, at the price of a penny, but 'a half-penny not refused.' It was followed 1714 by the *Norwich Courant, or Weekly Packet*. A *York Courant*, *Leeds Courant*, and *York Journal* were established about 1720, the *Manchester Gazette* 1730, and the *Oxford Journal* 1740. In 1843 were published in provincial towns of England 212 newspapers, and in Wales 8. The provincial newspapers of England numbered (1880) more than 1,000, besides 60 belonging to Wales and 20 to the Islands. About a fifth of the number profess conservative or liberal-conservative principles, half of them liberal, a small number perfect independence in politics, and the rest are avowedly neutral. Only a very few of these are conducted with any ability. Among the more important are the *Manchester Examiner*, understood to have a circulation of 35,000, the *Newcastle Chronicle*, of 36,000, and the *Manchester Guardian*. A characteristic feature of many second-class provincial papers is a column of gossip or scandal, entitled a letter 'From Our London Correspondent.'

The N. press of Scotland began during the civil wars of the 17th c. A party of Cromwell's troops, who arrived at Leith 1652, to garrison the citadel, brought with them a printer named Christopher Higgins, to reprint the London paper, *Mercurius Politicus*. The first number was issued 1653, Oct. 26; and 1654, Nov., the establishment was transferred to Edinburgh, where the reprinting went on

till 1660. 1660, Dec. 31, the first number was published of the *Mercurius Caledonius*, which proposed to furnish information regarding the 'affairs in agitation in Scotland, with a survey of foreign intelligence.' It lived only three months, and was succeeded by *The Kingdom's Intelligencer*. The *Edinburgh Gazette*, official paper published by authority, was established 1669 by James Watson, a printer of eminence and skill. In 1702 Watson started also the *Edinburgh Courant*, which attained its 215th number, and 1706 the *Scots Courant*. In 1718 the town-council of Edinburgh gave a privilege to James M'Laren to print the *Edinburgh Evening Courant* three times a week, on condition that before publication he should give 'ane coppie of his print to the magistrates.' It ceased to exist as a separate newspaper 1886, being incorporated with the *Scottish News*, principal conservative journal in Scotland. The *Caledonian Mercury*, now defunct, was published first 1720. The *Scotsman*, which came into existence 1817, under the conduct of Charles Maclaren, and was for a short time edited by J. R. M'Culloch, political economist, is the most influential liberal journal in Scotland, and is believed to have a circulation of 60,000. The earliest Scottish provincial newspaper was the *Glasgow Courant*, established 1715; the *Glasgow Herald*, next in importance to the *Scotsman*, was established 1782. The *Aberdeen Journal* was founded 1746 by James Chalmers; the first number contained an account of the battle of Culloden. The number of newspapers published in Scotland 1843 was 69; (1890) about 180. A few of the leading journals of Scotland contain articles little inferior in talent to those of the best English newspapers, and exercise considerable political influence. About 20 of the Scottish papers are regarded as conservative, 60–70 liberal, and the rest either independent or neutral in politics. Edinburgh has in all 11 newspapers, including the weekly issue of one of the three dailies; Glasgow 19 (with 6 dailies); Aberdeen 5; Dundee 5; Paisley 5. The price of most of the daily papers is 1*d.* (2 cents); of some it is ½*d.* (1 cent); that of the weeklies and biweeklies varies from ½*d.* to 4*d.* (from one cent to eight cents).

In Ireland, a news-sheet, called *Warranted Tidings from Ireland*, was printed during the rebellion of 1641; but the first Irish N., properly so called, was the *Dublin News-Letter*, commenced 1685. *Pue's Occurrences*, a Dublin daily paper originated 1700, continued half a century. It was followed 1728 by another daily, *Faulkner's Journal*, established by George Faulkner, 'a man celebrated for the goodness of his heart and the weakness of his head.' The oldest Dublin N. was *Saunders's News-Letter*, begun 1746, now stopped; the *Evening Post* was instituted 1725. The *Limerick Chronicle*, oldest Irish provincial paper, dates from 1766. Ireland possessed (1843) 79 newspapers; (1880) about 140. One or two of the 'national' journals verge, at times, on treason; and most of the Irish papers are characterized by an energy of language and a strength

of political bias unknown in other parts of the United Kingdom. The *Irish Times* and the *Evening Mail*, published in Dublin, and the *Belfast News-Letter*, are influential daily papers.

The Isle of Man supports 1 conservative, 2 liberal, and 1 neutral journals. Jersey has 9 journals, 4 in French and 5 in English; 4 are liberal, 1 conservative, 2 liberal-conservative, 1 independent, and 1 neutral. Guernsey has an official gazette in French, which is Protestant and neutral; besides 2 liberal, 1 liberal-conservative, and 2 neutral papers. These local papers are conducted with great spirit and success.

In the British colonies, newspapers are numerous, including those in India printed in the Bengalee and other native languages. *Hicking's Gazette*, the first Anglo-Indian N., appeared at Calcutta 1781; followed 1784 by a small official sheet, the *Calcutta Gazette, or Oriental Advertiser*. The still surviving *Bengal Hurkuru* was established 1795. In the earlier times of Indian newspapers, though there was no direct censorship, exemplary punishment was often inflicted on the authors of offensive paragraphs. In 1794 Mr. Ducane, editor of the *World*, was transported to Europe for an inflammatory address to the army which appeared in his paper; and a similar result followed 1798 to another editor, who made severe observations on the official conduct of a local magistrate. A censorship established by Lord Wellesley 1799 was abolished by the Marquis of Hastings 1818; but a license, revocable at pleasure, was required to be taken out by every printer of a N. In 1832 the Indian press consisted of 6 European and 5 native journals. The licensing system was done away with by Lord Metcalfe's law, 1835, a step disapproved of by the E. India directors, but was reverted to on the occurrence of the mutiny, 1857. In 1878 an Indian press law tantamount to a censorship was enacted, applicable to the vernacular press only. In 1875 there were in India 135 Eng., 270 vernacular, and 55 mixed newspapers.—The first Australian paper was the *Sydney Gazette*, founded 1803. Hobart Town had its journal 1804, and newspapers began to multiply in the Australian colonies 1824. The principal are now the *Sydney Herald*, the *Sydney Mail*, the *Argus* of Melbourne, and the *South Australian Register*. The materials for printing this last-named paper were carried out by the original s. Australian colonists, the first number having been previously printed in England. A similar course was adopted by the first New Zealand colony, 1839, in founding their *New Zealand Gazette* and *New Zealand Advertiser*. Tahiti has, since 1844, had its *L'Océanie Française*. There is also the *Fiji Times*, the *Fiji Gazette*, and the *Central Polynesian*.

France.—The earliest French N. is said to have been established by Théophraste Renaudot, physician, in the beginning of the 17th c. The first number of his *Gazette* appeared 1631. In the following year, through interest of Cardinal Richelieu, he obtained a royal privilege for

his *Gazette;* it was continued weekly till 1762, and then began to appear twice in the week, and to combine advertisements with public news. Commercial intelligence was added 1765, theatrical announcements 1792. In 1650 was started the *Gazette Burlesque*, a journal in verse, edited by the poet Jean Loret, devoted largely to the *chronique scandaleuse* of Paris; and 1672 the *Mercure Galant*, political and literary journal, which afterward became the *Mercure de France*, and was continued during the Revolution and till 1815. The first French daily N. was the *Journal de Paris*, which began 1777, and was discontinued 1819. A large crop of journals sprang into being with the Revolution, organs respectively of republicans, Jacobins, and royalists; but most of them had a very brief existence. Under the first Napoleon the freedom of the press was much restricted. By one of his earliest ordinances as first consul, all the newspapers except 13 were suppressed, and under the empire the tolerated journals were restricted to be little more than echoes of the official *Moniteur*. From the danger which attended the handling of political questions arose the practice of filling a large portion of the sheet with the 'Feuilleton,' consisting of a sketch or tale by a popular writer, ever since a characteristic of French journalism. During the restoration period, the press being again less fettered, there was large increase in the number of newspapers. In 1826 there were 127, and 1829 there were 307, newspapers in Paris. The July revolution at first added to their number; but the restrictive measures of 1834, consisting in the imposition of a stamp-duty and of an obligation to find security to the amount of 24,000 francs (about $4,632), led to the collapse of a large proportion of the journals. The *Moniteur*, *Débats*, and *Presse* were in the possession of the govt., and for a time also the *Constitutionnel;* and every shade of political opinion had its recognized organ. Emile de Girardin's scheme of widening the circulation of the govt. organ, the *Presse*, by bringing down the subscription price from 80 francs ($15.44) to 40 francs ($7.72), had the result of reducing the price of the opposition journals also. Cheap newspapers being thus established, it soon appeared that, with the class among whom they circulated most widely, the feuilleton was prized more than the political article; thus it became the policy of the journalists to pay great sums to the cleverest novelists of the day, in order to retain them in their service. 100,000 francs (about $19,300, paid by Dr. Véron of the *Constitutionnel* to Eugène Sue, for his *Juif Errant*, turned out as profitable a speculation for the journalist as for the novelist.

The revolution of 1848, like the revolutions that had gone before it, gave birth to a multitude of short-lived journals. 89 different political journals started into ephemeral existence in Paris during the Commune, 1871, Mar. 19—May 27. When Emperor Napoleon III. was pres. of the republic, a law was passed requiring the author of every N. article to affix his name to it. 1852

Feb., the press laws were incorporated, with increased stringency, into a *Décret organique sur la Presse.* Louis Napoleon, during the empire, relaxed the stringency a little. The republic holds newspapers in as great bondage as did its imperial predecessor. Among the most important daily papers in Paris are the *République Française, Pays, Siècle, Presse, Débats, Bien Public, France, Journal Officiel, Temps, L'Univers, Charivari,* and *Figaro.*

Belgium.—In the Low Countries an illustrated war gazette, the *Niewetijdinghe,* was published first 1605—the precursor of the *Gazette van Antwerpen,* which continued till 1805. During the Spanish and Austrian rule, each town had its privileged N., but the press was considerably fettered in expression of political opinion. Under the French rule, most of these journals disappeared or sank into insignificance. The *Annales Politiques* was a political journal of considerable popularity during the 18th c. Since the revolution of 1830, the press has been subject to few restraints, the newspapers have been numerous, and a few well conducted. The *Indépendance Belge* has a large circulation and considerable political influence. It is the property of a company of bankers, and is conducted by a Frenchman of talent and liberal sentiments. The *Moniteur Belge* was instituted as the official organ of the ministry 1830. *Le Nord,* a Russian organ published in Brussels, is conducted with great ability. A large circulation is enjoyed by the *Journal de Bruxelles,* the *Emancipation,* and the *Étoile Belge*—papers all in the interest of the *parti prêtre,* and supplied with correspondence from Rome. The *Echo de Bruxelles* and the *Journal de Belgique* are independent papers. The *Précurseur d'Anvers* and the *Escaut* of Antwerp have a good circulation—the latter is at once ultramontane and ultra-democratic.

Holland.—The earlier newspapers of Holland were in some respects, particularly in accuracy of information, in advance of those of other countries, but gave far more prominence to commercial than to political intelligence. They all bore the name of *Courant* appended to the name of the town where they were published. Though subject to no censorship since 1815, it was not till 1830 that they began to comment on political occurrences. At present the principal Dutch journals are the *Allgemeene Handelsblad* of Amsterdam and *Amsterdam Courant;* the *Haarlemsche Courant;* and the *Journal de la Haye, De Nederlandsche Stoompost,* and *Staats Courant*—published at the Hague.

Switzerland.—Switzerland being a confederation of states, each with its own institutions, the Swiss newspapers have a very local character; but they are numerous, and some have of late years greatly improved in character. The *Swiss Times,* Geneva, printed in both French and English, is now frequently quoted in all countries.

Germany.—Though in Germany the *Relationen,* above alluded to, were in some sort the precursors of news-

papers, yet no serial N., properly so called, seems to have existed till 1615. Frankfurt was the first town that possessed its journal; next followed Fulda, Hildesheim, and Herford. The earliest Leipzig N. was instituted 1660. The first N. with a staff of foreign correspondents was the *Hamburgsche Correspondent;* but no German N. can be said to have had any political weight till the institution of the *Allgemeine Zeitung*, founded by Cotta 1798, now published at Munich, which still takes rank as the first paper in Germany. During French ascendency, the German papers were little more than echoes of the Parisian; but a number of journals of a more national character sprang up during the war of liberation. The abuse of the liberty of the press, after 1830, led to the imposition, by the diet, of somewhat severe restrictions on newspapers. Although in the last quarter-century there has been decided improvement in the literary and political character of the German newspapers, the Socialist Law of 1878 is a severe restriction of the liberty of the press. Among principal Berlin daily papers are the *Vossische Zeitung*, the *Norddeutsche Allgemeine Zeitung* (semi-official), the *Neue Preussische Zeitung* (usually known as the *Kreuz Zeitung*), *Post*, *National-Zeitung*, and *Volkszeitung*. Many of the papers published in the various German states have much influence.

Austria.—The Austrian newspapers have partaken of the advance in the newspaper press of Germany. The most important is the *Wiener Zeitung*, with its evening reprint, the *Wiener Abendpost*, not insignificant either in a literary or political view; and the *Neue Freie Presse.*

Italy.—The early *Notizie Scritte*, or Gazettes, of Venice, have been mentioned above. The news-sheets which followed them were in disfavor with the see of Rome; and a memorable bull denouncing them was issued by Gregory XIII. Till 1847, the newspapers of Italy were small, politically insignificant, and subject to strict censorship. With the accession of Pope Pius IX., a flood of political journals made their appearance, of which only one or two were conducted with any talent, and few lasted above a year. In the Sardinian dominions there continued no fewer than 45 political papers published 1852, 41 of which were in Italian and 4 in French. Of that number a great many soon afterward collapsed. The removal of the former restrictions of the press, in other parts of the kingdom of Italy, has started into life a number of newspapers: 17 political and 10 partially political papers are now published in the former domain of Victor Emmanuel, besides 31 periodicals, many of which correspond in some degree to our ideas of a N. Few are as yet of much promise. The leading articles are poor, no great social or commercial questions are discussed, and each journal is the mere advocate of one or other of the political parties. Perhaps the best, on the whole, are *Il Diritto* and *L'Opinione*, which may be compared to some of the second-rate French papers. The *Gazetta Ufficiale del Regno d'Italia* is the ministerial organ, and *L'Italie*, published in France,

is looked upon as the organ of the department of foreign affairs. Humorous newspapers, after the model of the London *Punch*, are abundant. The *Voce della Verita* is the paper which advocates the cause of the pope. *La Liberta* and *Il Fanfulla* are published in Rome; Genoa issues *Carrière Mercantile;* Milan, *La Perseveranza;* and Naples, the *Pungolo* and *Patria.*

Spain.—Sheets called *Relaciones*, giving accounts of important occurrences, appeared in Spain at irregular intervals in the 17th c., occasionally in the form of romances; but no Spanish N., properly so called, existed till the 18th c., and 50 years ago Madrid possessed but one journal. The first approach to political journalism followed the Peninsular war and the establishment of the Cortes. The gross license with which many of the then established papers were conducted led, 1824, to the suppression of all except the *Diario* and *Gaçeta* of Madrid, the *Gaçeta de Bayona*, and a few purely commercial or scientific. At present, about 40 journals are published in Madrid, politically and in every other respect unimportant; the most read is the *España.* The press of Portugal is as insignificant as that of Spain: the official organ is the *Diario do Governo.*

Sweden and Norway.—The earliest Swedish N. seems to have been *Ordinarie Post Tidende*, established 1643, continued till 1680. It was followed by *Relationes Curiosæ*, in Latin (1682–1701). Two French papers, *Gazette Française de Stockholm* and *Mercure de Suède*, existed in Sweden in the second half of the 18th c.; but politically the N. press cannot be said to have had any influence until the establishment of the *Argus* by Johanssen 1820. For a number of years the principal journals of Sweden were the *Fäderneslandet*, organ of the royalists, and the *Aftonbladet*, organ of the reformers. The latter, on King Oscar's accession, ceased to be an opposition journal. The official paper is the *Post och Inrikes Tidningar.* Every provincial town has now its journal, and there are about 114 newspapers in all published in Sweden. Of Norwegian papers, the oldest is the *Christiania Intelligentssedler*, founded 1763. *Den Constitutionelle* is the govt. journal, and *Den Morgenblad* the organ of the opposition.

Denmark.—In Denmark, journalism is still more recent. Till 1830, only two newspapers were published in Copenhagen, both made up entirely of extracts from foreign journals. Since 1834, there has been improvement in the character, and increase in the number, of Danish journals. They numbered 36 in 1849. The oldest N. now in Denmark is the semi-ministerial *Berlingske Tidende*, founded 1749. The *Fädrelandet* is the journal of the Scandinavian popular party.

Russia.—The earliest newspapers in Russia were published under the personal surveillance of Peter the Great, first in Moscow, afterward in Petersburg, to report the progress of the war with Sweden. Political journalism, properly so called, has never flourished in

Russia; and has, in fact, been allowed only in important political crises—as the French invasion 1812, the Polish insurrection 1830, and recently during the Crimean war, when the journalists were allowed to exercise their ingenuity in defending the government policy. The largest circulation was at that time attained by the *Sjéwernaja Ptsch'eta*, or 'Northern Bee,' which had its feuilleton. Generally speaking, the Russian newspapers occupy themselves with scientific and literary subjects rather than public or political news. The *Journal de St. Petersbourg*, in French, is the organ of the court, and has considerable circulation out of Russia.

Turkey.—The first N. in Turkey was founded 1795 by M. Verminhac, envoy-extraordinary of the French govt. to the court of Selim III.: it was printed in French at Pera. A Frenchman of the name of Blacque established at Smyrna, 1825, the *Spectateur de L'Orient*, afterward *Courrier de Smyrne*, which had considerable political influence during the Greek war. The same M. Blacque afterward edited the official journal of the Porte, the *Moniteur Ottoman*, which has, since 1832, been reprinted in Turkish under the name *Taquîmi Vaqâi*. The *Taquîmi* was till lately a very badly printed sheet; but it has much improved, and now issues weekly instead of monthly, sometimes containing respectable literary and political articles. But the most important Turkish paper is the *Djeridei Havadis*, founded 1843 by Alfred Churchill, Englishman born in Turkey. It comprises a great variety of matter, a court gazette, official appointments, home and foreign news, advertisements, prices of stocks, and a feuilleton. There are besides in Constantinople two new and popular papers: *Terguman Ahwal*, or 'Interpreter of Events,' published three times a week; and *Tas veeri Evkiar*, or 'Mirror of Thoughts,' twice a week. The latter has scientific and literary repute. The Turkish papers have no leading articles, and, from the constitution of political society in Turkey, there can be no avowed opposition to the policy of the government. The *Courrier de Constantinople*, in French, is one of the principal journals of the capital; here appear also the *Levant Herald* and the *Levant Times*, in English. And papers in French, Italian, Greek, and Armenian are published in various parts of the empire.

Greece.—Various newspapers in modern Greek appeared at Paris and Vienna before Greece obtained her independence; but the first political journal in Greece was the *Hellēnikē Salpigx*, founded 1824, and soon followed by the *Hellēnika Chronika* and *Hellēnikos Tēlegraphos* in Missolonghi, the *Philos tou nomou* at Hydra, the *Ephēmerides Athenaikai* at Athens, and the official *Genikē ephēmeristēs Hellados* at Nauplia, with its opponent the *Apollōn*, which afterward became the *Athēna*. Most of these papers disappeared 1833, on the system of sureties being introduced. The *Sōtēr* was established as the govt. organ in 1833. More than 80 newspapers are now published in Greece, the largest number in

Athens. Of these several appear in French, Italian, and English. The leading political journal of Athens is the semi-monthly *Spectateur d'Orient;* but, generally speaking, the Greek papers make no endeavor to lead the parties in the state.

United States.—The first attempt in N. America at a journal of news and events occurred in the instance of a little paper called *Publick Occurrences both Forreign and Domestick*, designed to be a monthly and issued in Boston, the initial number dated 1690, Sep. 25. This paper was short-lived, having come in conflict with the authorities concerning some local matters, and was suppressed. The next N. issued in the colonies was the *Boston News-Letter*, which started 1704, April 24. This was followed by the *Boston Gazette.* Of the *News-Letter*, which through vicissitudes and troubles lived 72 years, there is but one complete file known, which is in the collection of the New York Historical Soc. The very first number contained arrivals by sea, obituary notices, appointments, sermons, war news—but there was not an advertisement. In fact, local news was excluded, with the exception of deaths. The first effort at reporting in this country was made for the *News-Letter* shortly after it was established. Six pirates were executed on Charles river, a little out of Boston, 1704, June 30, and a description of the scene filled nearly one-half of the paper. The *Boston Gazette* was printed on a half-sheet of foolscap. It was owned and edited by no less than five postmasters 1719–39, and by the heirs of the last postmaster to 1741, being thus a postmasters' organ. In 1741 it was merged with the *New England Weekly Journal.* We have, as interesting facts with regard to these three papers, that they started the custom of the 'organ,' the custom of newspaper rivalry, as the last two were engaged in warfare during most of their existence, and the custom of reporting. The fourth N. in the colonies was issued 1719, Dec. 22, in Philadelphia, and was called the *American Weekly Mercury.* This paper also was printed by a postmaster, Andrew Bradford. The *Mercury* introduced another feature of modern journalism: 1754, Oct. 17, it published the particulars of the battle of Phillipsburg, accompanied by diagrams. Andrew Bradford died in the latter part of 1742. The *Mercury* was suspended a week, after his death, and on its reappearance its column rules were inverted for six weeks.

The *New England Weekly Journal*, of which the 55th number, dated 'Monday, April 8, 1728,' is before us, measured 13 inches by 7. It was a single leaf, with the following imprint: 'BOSTON: Printed by S. Kneeland & T. Green, at the Printing House in Queen-Street, where Advertisements are taken in.' This paper, if not the earliest, is the earliest recorded, instance of the publication of advertisements. The number in question contains a quarter of a column of these, including announcements of several books, also the statement that a Mr.

Nath. Pigott intends to open a school 'on Monday next, for the Instruction of Negro's, in Reading, Catechizing, & Writing if required.' There is also an advertisement of a new importation of coffee, and two announcements of negro girls for sale, as follows:

☞ *A very Likely Negro Girl, about* 13 *or* 14 *Years of Age, speaks good English, has been in the Country some Years, to be Sold, Inquire of the Printer hereof.*

☞ *A very Likely Negro Woman who can do Houshold Work and is fit either for Town or Country Service, about* 22 *Years of Age, to be Sold, Inquire of the Printer hereof.*

All the news contained in the paper is foreign, being, four months later, from England, and the proclamation of the capt.gen. of Jamaica. For local news, excepting the advertisements, there was nothing printed but obituaries, and arrivals and departures of vessels in the port of Boston. The *Boston News-Letter* was published during the revolution, and was loyal to the home government. It was the only paper issued in Boston during the siege of that city by Washington. The *New England Courant* was issued by James and Benjamin Franklin. The first paper in New York was published by William Bradford 1725, Oct. In 1727 one was issued at Annapolis, Md., called the *Maryland Gazette*. Benjamin Franklin's *Universal Instructor* appeared in Philadelphia 1728. The *New York Weekly Journal* was published 1733 by John Peter Zenger, who was tried and acquitted for libel against the government. The *Rhode Island Gazette* was begun at Newport, R. I.; and the first papers in the south appear to have been the *South Carolina Gazette*, 1731, and the *Virginia Gazette*, 1736. A newspaper in German was issued at Germantown, Penn., 1739, and in 1743 one appeared in Philadelphia. Of all the papers during the first period of journalism in America, that issued by Benjamin Franklin, the *Universal Instructor*, whose title was changed to the *Pennsylvania Gazette* 1729, and which continued under his management till 1765, was the most important. This paper continued in existence until 1804, and was afterward re-established for a short period under the same name. Under one designation and another, it continued to exist until 1845, when it was merged with the *North American*. This closed the career of Franklin's gazette, after an existence of 117 years. At the commencement of the revolution there were seven newspapers published in New England, four in New York, and two in Virginia. One of the most important of the revolutionary newspapers was the *New York Journal, or General Advertiser*, started 1767, May 29, under the auspices of George Clinton and Philip Schuyler. While New York was in possession of the British, the *Journal* was printed first in Kingston, then in Poughkeepsie. *Rivington's Gazette* was the British organ in New York, and its proprietor was several times mobbed by the 'Sons of Liberty.' One of the contributors to this paper was Major André. From

1748 to the peace of 1783, 49 newspapers were established in the colonies, making 67 in all, from the publication of the first 1690. The period immediately following the revolution was remarkable for the virulence of the factional and party fighting between newspapers. It is stated that 'even Washington, who came from Yorktown like a demi-god, received more wicked and vile abuse than would now be given to an abandoned felon.' Among the journals of this period was the *Massachusetts Spy*, published in Boston by Isaiah Thomas three times every week, beginning 1770. Later it was issued twice a week, but after a few months became a weekly paper. It was one of the most powerful influences on the side of the patriots before and during the revolution. 1775, May 3, the *Spy* was removed to Worcester, Mass. Isaiah Thomas was one of the boldest of the patriots, and was on the list of 12, which included Samuel Adams and John Hancock, who were to be summarily executed if captured. To avoid this, he sent his type and press across the Charles river, just before the battle of Lexington, and had them conveyed to Worcester. It is related of him that he was concerned with the patriot Paul Revere in his memorable 'midnight ride,' celebrated in verse by Longfellow.

The first daily N. in the United States was issued in Philadelphia 1784, under the title *American Daily Advertiser*, now the *North American*. Next year was published the *New York Daily Advertiser*, of which the poet Philip Freneau was for some time editor. The *Independent Journal*, published in New York, is notable for having contained the remarkable series of articles by Hamilton, Madison, and Jay, afterward collected as 'The Federalist.' Newspapers began to extend westward with the *Pittsburg Gazette*, 1786, a paper which is still in existence. Numbers of newspapers in those days combined, an interesting instance being the *Philadelphia North American*, in which are included 10 different papers—namely, the *Pennsylvania Packet*, established 1771; the *American Daily Advertiser*, 1784; the *Gazette of the United States*, 1789; the *Evening Advertiser*, 1793; the *United States Gazette*, 1804; the *True American*, 1820; the *Commercial Chronicle*, 1820; the *Union*, 1820; the *North American*, 1839; and the *Commercial Herald*, 1840. Of the many hundred daily and other newspapers started in New York alone, from the commencement of Bradford's *Gazette* 1725 to 1827, only two are living, the *Commercial Advertiser* and the *Evening Post*. The former of these papers began its existence at the close of 1793, under the name of the *Minerva*, with Noah Webster as its editor. He soon united with his paper a semi-weekly called the *Herald*, under the name *Commercial Advertiser and New York Spectator*. It is a curious fact, in connection with the history of this journal, that in its nearly one hundred years of existence it has been in the hands of but few owners. Webster retired 1803, in favor of Zachariah Lewis, and ten years later it passed from him to Francis

Hall, who with his son continued in its control until it became the property of Hugh Hastings, after whose death it soon came into the hands of its present owners. The *Evening Post*, as a name for a daily paper, dates back as far as 1746, when the *New York Evening Post* was started, but lived only about a year. The *Evening Post* was established as a daily and semi-weekly 1801. The first paper printed in Maine was the *Falmouth Gazette and Weekly Advertiser*, 1785. The *Daily Courier* was issued in Portland 1829, edited by Seba Smith, Jr., the original 'Jack Downing.' The first N. in Harrisburg, Penn., was the *Oracle of Dauphin*. The first in Ky. was commenced by John Bradford, in Lexington, 1786. It is stated of the *New York Gazette*, which started 1788 and was merged in the *Journal of Commerce* 1840, that one of its publishers, John Lang, was the first to collect ship news by boat in New York harbor. The prevalence of the title 'Gazette' is especially prominent in the state of S. C., which had, as early as the beginning of the 19th c., the *State Gazette*, published in Charleston by Peter Freneau, the *Carolina Gazette*, Charleston, and the *South Carolina State Gazette and Columbian Advertiser*, Columbia, printed by Daniel and J. J. Faust, state printers. Copies of these papers as far back as 1805 show a number of advertisements; and one of them is peculiarly interesting in containing an account of the attack on the frigate *Chesapeake* by the British man-of-war *Leopard*, out of which, with similar instances, grew the war of 1812. In 1793 Ohio had its first N., the *Centinel of the Northwestern Territory*, printed in Cincinnati by William Maxwell, second postmaster of the town. This was the first newspaper and printing-office established n. of the Ohio river.

The idea of publishing journals for the sake of news did not really come into vogue in the United States until about 1820. Prior to that period there had been so many exciting events in connection with the history of the newly formed Union, that all the newspapers which were founded had had for their purpose the establishing and regulating of public opinion on one or the other side of prevailing politics. Moreover, newspapers were costly and had very limited circulation, the fact that they were printed slowly, on hand-presses, having had much to do with this. The press established by Benjamin Franklin had a capacity of not more than 100 perfected sheets in an hour. From 1820, more attention began to be given to news; and when, 1833, Sep. 3, Col. R. M. Hoe, inventor of the numerous printing-presses which bear his name, started the *Sun*, the first penny N. in America, journals began to be devoted almost entirely to news. The next one-cent paper was the *Morning Herald*, progenitor of the *New York Herald*, of which the first number was published 1835, May; and this was followed by the *Tribune*, started 1841 by Horace Greeley, who had already begun his career as journalist by issuing the *New Yorker*, 1834. With these three papers may be said to have originated modern journalism in America

With the foundation of these newspapers originated every method of obtaining news, and this in close competition—a sort of warfare by which the public and the N. owners both were benefited. Expresses were established on steamboats and railways, and pony expresses where these did not exist. Carrier-pigeons were tried, but without much success; and the institution of correspondents at all principal news centres became an absolute necessity to a well-established journal. But all the methods of gathering news which were devised would have been useless but for the application of invention to the art of printing, to the extent of the production of an enormous number of printed sheets in the least possible time. The power and perfecting presses of Hoe, Campbell, Bullock, Walter, and others, soon gave vast impetus to journalism, from the ten-cylinder press, which could throw off 10,000 papers in an hour but which occupied a space equal to a three-story house and required 8 to 12 men to run it, to the magnificent perfecting-presses of the present day. The modern presses are more compact, require under one-fourth less working space, and are worked by three men. Their capacity ranges from 24,000 to 48,000 per hour, and in some types, as the octuple press, as many as 96,000 eight-page papers are printed per hour. In the production of these papers, sheets of 8, 12, 16, and up to 40 pages can be printed—the pages cut, often the backs pasted together—and thrown out folded and ready for mailing or delivery at the rate of 400 a minute.

The history of journalism since the war of 1812, if completely written, would be the history of the world. Especially in the United States would it be peculiar in its comprehensiveness, its detail, and its personalities, through which the biography of every prominent or notorious character, from the criminal up to the statesman, may be investigated. Such a history would begin with the publication of foreign news in the sheets of the 17th and the early part of the 18th c., domestic affairs not being then valued or considered of importance. Then came slight attempts at directing public opinion with regard to important political situations, thus beginning what is now known as the editorial page. Later on it began to reach the minds of tradesmen that a tract or circular which was seen by any considerable number of persons would afford a good method for the announcement of their wares, and thus began the system of advertising. As the circulation of papers increased, publishers, perceiving the importance and value of the announcement of this fact, made it known in their columns, and thus drew more advertisers. Thus the system of advertising began to exercise a certain degree of power over the publication of the journal itself, and competition for the emolument received by this means became one of the causes of the introduction of novel ideas and of the general rivalry between journals. As newspapers began to feel the influence of power-presses, and their circulation grew to enormous proportions, all these elements

and factors increased in importance. The editorial page began to assert itself—sometimes as a menace, sometimes as a sustaining power—not only in politics, but in all the great and increasing enterprises, in commerce, manufactures, and finance, which were growing up with the country. Soon it became possible, and was so observed by manufacturers, tradesmen, and others, to exercise a certain influence on the expressions of opinion in journalism, through the power of advertising. In fact, advertising grew to be the main dependence of a thoroughly organized newspaper, so much so that it is frequently the case that every copy of the paper which is circulated costs much more than is paid for it. It is thus evident that advertising has great possibilities of use as an influence for the formation of opinion in whatever interest may for the time require journalistic backing. All this would naturally result in the formation of different classes of newspapers: those running on an independent basis, looking to their circulation for existence and profit, and forming and increasing this circulation through literary or other intrinsic merits; those which exist for the accumulation and distribution of the largest amount possible of actual news of importance to the reading world; and those whose existence depends partially or completely on what is in fact subsidizing, from one or another political party, or from trade organizations, or from some other industry, interest, or 'ism.' What is known as 'the power of the press' has always been in the United States more or less an unknown quantity, carrying in certain circumstances enormous weight of influence, arising from known conditions of absolute integrity and of unusual skill and judgment—also subject to variations and digressions into paths not always scrupulous or high-principled. Given a powerful engine in the hands of men desirous only of wealth, political power, or other self-aggrandizement, and given also an enormous enterprise desiring an agency through which to accomplish its objects, and you have the factors which go to the structure, the treatment, and the success of many of the most tremendous undertakings of the present century.

The religious element, or the sectarianism which speaks in its name, has had, as a rule, very little to do with the character of daily journalism in this country, though attempts, always abortive, have been made, from time to time, to exercise such an influence. This fact has brought about the necessity for publications specifically undertaking the promulgation of theological ideas, the spread of religious truths, and the encouragement in general of the vast and growing ecclesiastical institutions. There have, therefore, been, from time to time and with varying success as to business enterprises, hundreds, perhaps thousands, of religious journals established, and which have lived or died as the case might be. But this has been the case also with other papers, usually appearing weekly or semi-weekly, which have had

for their purpose the advancement of the interests of classes, professions, schools of thought, and theories of various kinds. The United States has grown to be a country of organizations. Humanity has here become gregarious to a greater degree, perhaps, than ever before known in the history of the race. It has formed itself into concentric circles illustrating every conception possible to the human mind and every interest desirable to man. These include secret societies, trades-unions, spiritistic associations, social, national, and international organizations, clubs, charitable societies, combinations for the spread of amusement, organized effort even in criminal lines as well as for suppression of crime. A notable instance of the specialization of the press is seen in what are known as 'trade papers.' The number of these is legion. There is, perhaps, not a manufacturing or commercial interest or mechanical trade which has not one or more representative periodicals. Such papers are of very great importance to the trades which they represent. Some are merely advertising sheets; others are literary in much of their contents; and others still are deeply scientific: yet each conducted to subserve the interest of the respective trade. Some instances of trade papers have been marvels of financial success. The vast number of advertisements which they publish in every issue, and the high prices which they charge per line for such advertisements, are astounding when considered in connection with the fact of the great competition that exists for all these. These papers are published weekly, semi-monthly, and monthly. Of financial papers which might be considered to belong to this class, a number are published daily. The agricultural industry, mining, manufacturing in all its branches—these are represented by hundreds of periodicals, many of which have a remarkable and continued success, though the history of journalism is strewn with the wrecks of thousands of others which did not exist long enough to pay for the original investment.

There have been numerous attempts at comic and satirical journalism in the United States. For many years it was the custom, as it still is, to admit into the columns of daily papers bits of humor or satirical allusion quoted mainly from *Punch* and other foreign papers. About half a century ago, however, there sprang up the first of a class of distinctly American humorists, beginning, perhaps, with Lieut. Derby ('John Phœnix'), and continued through Artemus Ward, Mark Twain, 'the *Danbury News* man,' Robert Burdette, and many others whose names will occur to the reader. But comic journalism started about 1850, when the *Pick* and the *Picayune* were published in New York. About the beginning of the war of secession, a number of weekly comic papers were started, including the *Lantern*, edited by John Brougham; *Young America*, conducted by Charles Gayler; the *Carpet Bag*, edited by Charles G. Halpine ('Miles O'Reilly') and B. P. Shillaber ('Mrs. Partington'); *Momus*, edited by

Charles G. Rosenberg, a clever writer and artist and the original 'Jenkins' of the London *Morning Post; Yankee Doodle*, which appeared 1846 and was very successful; *Vanity Fair*, longest-lived of all, published first 1859, Dec. 31. This paper included among its contributors Charles Dawson Shanly, Charles Godfrey Leland, Charles F. Browne ('Artemus Ward'), George Arnold, Henry Clapp, Fitz James O'Brien. It lasted until the end of 1862. In 1865 *Mrs. Grundy* appeared, under the editorship of Dr. H. D. Carroll and Charles D. Shanly. Thomas Nast contributed to it, as did H. L. Stephens. 1870, Apr., *Punchinello* appeared, with generally the same group of contributors and artists. It did not live a year. After these could be mentioned *Nick Nax*, the *Comic Monthly*, and the *Phunny Fellow*, specimens of a class of papers of which large numbers were born and died within brief periods of each other. In the mean time, St. Louis had produced a clever German comic paper, named *Puck*, which gave the title to the most successful humorous weekly that has ever appeared in the United States. *Puck* was published in German in New York, for some time, under the proprietorship of Keppler, the artist; and when Frank Leslie's establishment, in which he was employed, was temporarily embarrassed after the death of Mr. Leslie 1880, this able artist, taking with him a number of the art staff of Leslie's, founded the existing *Puck* The politics of this paper being generally of the democratic order, the republican party found it necessary to offset its brilliant caricatures and incisive wit by the establishment of an illustrated humorous and satirical weekly which should present their side of party politics. They accordingly established a paper called *Judge*, which is still in existence and is conducted with success, including on its staff many well-known and able contributors.

The Sunday papers are peculiar to this country in the form in which they appeared a generation ago. In England in only a very few instances has there been publication of newspapers on Sunday, while no English daily paper has ever published a Sunday edition—the only venture in that direction being that of the *New York Herald* in London, beginning 1889. In France and other continental countries, papers have been published on Sundays as on other days. In the United States, before the civil war, Sunday papers were published in different cities as far back as 1838—more in New York than in any other city. They included the *Sunday Courier*, *Sunday News*, *Sunday Atlas*, *Noah's Sunday Times*, *Sunday Packet*, *Sunday Dispatch*, and *Sunday Visitor*, which was changed 1840 to the *Sunday Mercury*, and still exists under that name. These papers were very successful, being considered innocuous, offering usually a very mild and not displeasing literary pabulum; and till the period immediately preceding the rebellion were in respect of morals and manners faultless. Possibly a change in public sentiment, falling off in the strength of religious

and moral scruples, or other influence, caused certain of these journals to assume a morbid and sensational style and character, under which some of them have flourished vigorously, while others have perished ignominiously. But what destroyed all the influence of such journals was the invention of the Sunday issue of the daily paper—unknown in journalism until originated during the war of the rebellion by the *New York Herald*, this example being followed by the other prominent dailies, one after another, as it became evident that the public, especially during that period of excitement and deep personal interest in events, demanded its news every day. At first these Sunday issues confined their columns to the news of the world; but after a time a literary feature was introduced, including mainly selections from current foreign and American magazines, book reviews, short stories, and poetry. Gradually this feature was extended in the principal cities, such as New York, Boston, Philadelphia, Chicago, and St. Louis, and numerous four, six, eight, and even ten-sheet papers began to be printed on Sundays. The great extension of this particular enterprise was chiefly due to the discovery that advertisers were glad to advertise to a much greater extent on that day than on others, probably on the theory that readers would have more time to study their announcements then than during the busy days of the week. The next feature introduced into Sunday journalism, and to a certain extent into that of every day in the week, was illustration—previously confined to the class of illustrated weeklies and the single illustrated daily published in the United States, the *New York Daily Graphic*, which after a generally precarious existence, extending over quite a number of years, and including numerous failures and resuscitations in different hands, has recently collapsed altogether as an illustrated daily. The new inventions which facilitated the rapid production of cuts, by the application of various newly discovered processes, doubtless partly grew out of and partly occasioned the large use of illustrations in the daily newspaper. To this end acted also the tremendous competition in the business, which has been so largely increased in recent years. It had been predicted that the application of illustration to journalism, and the introduction of literary features to the extent to which it has been carried, would tend largely to do away with magazines, which had hitherto held those fields to themselves. But this prediction has not been realized; on the contrary, the firmly established magazines, while undoubtedly driven to great improvement by this sudden and unexpected competition, have greatly increased in circulation, and have improved the character of their illustrated work and extended their value and use as advertising agents.

The first illustrated N. was published about 1850, at which time Messrs. Beach of the *New York Sun* and P. T. Barnum each contributed $20,000 for the establish-

ment of an illustrated weekly in New York. Gleason and Ballou, in Boston, had introduced similar publications, and made fortunes out of their investment. In 1848 Frank Leslie, an engraver of merit, had arrived in America, and, making himself known to the publishers of *Gleason's Pictorial*, in Boston, was engaged and worked on that paper for some time. Mr. Leslie, whose real name was Henry Carter, was a draughtsman as well as an engraver, and, being ambitious, soon saw that there were in New York possibilities for him, and an open field, which were not offered in Boston. Making the acquaintance of Mr. Barnum, he became manager of the *Illustrated News*, which appeared 1853, Jan. 1, but was afterward merged in *Gleason's Pictorial*. In 1854 Frank Leslie began the publication of what has since been known as *Frank Leslie's Illustrated Newspaper*, which grew to an enormous establishment, employing 70 wood-engravers and a large number of the most able artists in the country. The house soon added to its original publication a number of others, including the *Chimney Corner*, the *Popular Monthly*, the *Ladies' Journal*, *Pleasant Hours*, etc. Mr. Leslie died 1880, and the business was thereafter successfully conducted by his widow under the name of Frank Leslie, until, 1889, she disposed of the *Illustrated Newspaper*, and, having already lopped off various publications which were unprofitable, has since confined her attention to the *Popular Monthly* and one or two other illustrated magazines. The first number of *Harper's Weekly Journal of Civilization* was issued 1857, Jan. 3, and has been conducted ever since with steadily increasing success and influence. Many other illustrated newspapers have been established, which in the elaborate elegance of their illustrations, procured at considerable expense, and the finish of letter-press may be considered the finest specimens of this class of paper.

The leading daily papers of the United States at present are: NEW YORK—the *Herald, Sun, Times, Tribune, World, Journal of Commerce, Press, Journal,* and *Star*, with the *Statts-Zeitung*, a prominent and influential German N.; the principal evening papers are the *Commercial Advertiser, Evening Post, Mail and Express, Telegram* (an appendage to the *Herald* establishment), and evening editions of the *Sun* and *World*. BROOKLYN—the *Eagle, Times,* and *Standard-Union*. BOSTON—the *Globe, Herald, Journal, Advertiser, Evening Transcript*. and *Evening Traveller*. PHILADELPHIA–the *Public Ledger, Press, Times, North American,* and *Evening Item, Telegraph,* and *Star*. BALTIMORE—the *American* and *Sun*. WASHINGTON—the *Star* and *Post*. CINCINNATI—the *Commercial Gazette* and *Enquirer*. CHICAGO—the *Tribune, Times, Herald, Inter-Ocean,* and *News*. ST. LOUIS—the *Globe-Democrat* and *Post-Dispatch*. LOUISVILLE—the *Courier-Journal*. NEW ORLEANS—the *Times-Democrat* and *Picayune*. SAN FRANCISCO—the *Chronicle* and *Examiner*. GEORGIA—the *Atlanta Constitution*. SPRING-

FIELD, MASS.—the *Republican*. CLEVELAND—the *Plain Dealer* and *Leader*. PITTSBURG—the *Dispatch*. Of course, while the above-named journals all are representative papers in a certain sense, and all have large local influence, and many have a widely extended domain and importance, yet they differ materially in their organization and the methods by which they are conducted. It would be impossible to give a general idea of the interior organization of a great daily N. which should cover all these; but the following will be found applicable in many respects to all, and exact in regard to the internal management of many.

The system of gathering news in a first-class modern N. in a large city comprises local reporting, correspondence by telegraph at principal news-centres throughout the country, and the telegraph cable, by which is obtained all foreign news, either direct, as with the great metropolitan dailies, or by special arrangement, in the case of large newspapers in other cities, by which the news, as cabled, is sold to them from first hands. This applies only to what is known as 'special cable.' Besides these sources of information there are the various Press Associations (q.v.), including, first, the Associated Press, which supplies news, both domestic and foreign, to all papers throughout the country which choose to pay for it. Other similar associations are the United Press, United States Press Association, the Dunlap Cable Company, etc. Still another feature in the construction of a N., a product of recent growth and one hitherto employed mainly in the interior of the country, is the system of syndicating. This is applied chiefly to literary matter, stories, sketches, and particularly to a larger description and account of important events, usually illustrated, than is practicable or customary under the common N. method. Of these syndicates there are several principal ones in New York. The idea of the syndicate as thus applied is said to have originated with Irving Bacheller, who started it in Brooklyn about 1882. A syndicate's list of patrons includes all the leading papers in the principal cities: with these it contracts to furnish, for a stipulated sum per week, literary matter of various kinds, much of which is obtained from the most important and leading authors of this and other countries, at prices which would render it too costly for newspapers to purchase individually. The syndicate possesses a staff of writers who read the newspapers carefully, and prepare articles, under instruction, on current topics, obtaining their facts regarding them from the best sources of information. Artists are employed to illustrate these articles. Papers and articles are obtained by the syndicate from contributors, also, all over the world, who are handsomely paid, the division of expense among a large number of papers enabling the syndicate to give the best prices for what it buys, to sell it to the press at rates exceedingly moderate for each paper, and at the same time to make a good profit for itself. While these syndicates pay

for contributed matter all the way from $12 per column to as high as $200 or $300, the average cost to the papers throughout the country employing them is not more than a dollar and a half to three dollars per column, the charges varying according to the size of the towns or cities where the papers are published and the circulation of the papers themselves.

Still another method for the production of a N. at the lowest possible cost is the use of what is known as 'plate-matter,' applied, however, mainly to small country papers, which cannot afford the cost of much composition, or, indeed, cannot obtain local news sufficient to require it. By this system, literary and historical matter, jokes, poetry, scientific items, etc., are selected by a competent editor and set up in the office where the plate-matter is prepared. It is then stereotyped, and is furnished in lengths of any size, at so much an inch, to whatever papers choose to buy, from a single inch up to a full page. The articles being so chosen and arranged as to be of all possible sizes, the stereotyped plates can be so cut as to fill up any space vacant in whatever paper they are used. These plates are furnished weekly and sent by express to the purchaser, who puts them up and blocks them as desired. Of course, the cost, being distributed among a large number of papers, is very little. Still another form of lessening the expense of country papers is to supply from the metropolis, or other chief cities, papers of the size and style desired, one side of which is entirely printed with such matter as is wanted by the publisher or editor employing this method. By means of having included in the matter thus furnished a number of standing advertisements, the actual cost of composition of the other side of the paper is absolutely brought down almost to nothing, so that the price of the publication is practically reduced to the cost of the paper itself.

The internal staff of a leading morning N. of large circulation varies, as has been said, but, as a general rule, will be found to consist of the following: (1) The editor-in-chief, who directs the policy of the paper, generally in subordination to the wishes of the proprietor or proprietors, and who is the final resort and court of appeals for the decision of all staff questions. (2) The managing editor, who has direct control over the N. in regard to its methods of collecting news and printing the same, and who has under him the heads of all departments, being himself chief of the practical workings and management of the paper. (3) The news-editor, who fills a day position, and whose business it is to see that the events of the day are properly covered, so far as is possible, for which purpose he has control of the telegraphic correspondents and of such departments as collect their material during the daytime. (4) The night editor, on whom the final responsibility rests for the proper and accurate issue of the journal of each day; he is assisted by the telegraphic editor, who receives all the night

domestic messages and distributes them to the various editors, with the necessary instructions for their proper preparation, referring to the night editor all questions concerning which he does not feel competent to decide, or the responsibility of which he is unwilling to take upon himself. The night editor 'makes up' the paper, assigns to every department its permitted space, decides upon the size of the paper for the day, whether a single, double, triple sheet, or otherwise, and is responsible, till the time of going to press with the last edition of the paper, not only for everything that goes into it, but for everything that is left out of it. (5) The city editor, aided by one, two, or three assistants, and having under his direction a corps of 20 to 40 reporters, besides having the use of the local departments of the Press Associations (q.v.); he has all the responsibility with regard to local events, their proper and special reporting, and the general conduct and handling of everything concerning the territory which comprises his limits: in a large city this position is one of the most important, responsible, and exacting of any on a N. (6) The foreign department receives and edits all foreign cable messages, taking care to procure investigation of any local or domestic connections with the foreign news which it receives. (7) The sporting department covers all sports, in all parts of the country, including yachting, boat-racing, tennis, base-ball, foot-ball, athletics, horse-racing, prize-fighting, etc. (8) The dramatic department includes everything in relation to the stage, musical or theatrical. (9) The ship-news department, where such a department exists, includes publication of all clearances, arrivals, and departures, in all important ports of the world, these being received by the local service, by telegraph, and by cable. (10) The financial and railroad departments cover the occurrences in connection with these subjects, at the principal bourses, exchanges, and commercial centres of the world. (11) The telegraphic department receives all Associated Press dispatches, and all telegraphic communications from special correspondents throughout the country; and these are placed in the hands of the competent and experienced editors who prepare them for the composing-room. In the city department, over which the city editor presides during the daytime, and an assistant at night, a similar plan exists in the case of a number of 'copy-readers,' among whom is distributed the copy turned in by the reporters after they have completed and written their assignments. These copy-readers prepare the copy for the compositors. (12) The exchange department is charged with the newspapers that come in as exchanges from all parts of the world, its business being to read these carefully and to distribute among the different departments those which pertain to their specialties, for the information of the heads of such departments.—The editorial department proper includes the editorial writers, one of whom is chief and lays out the subjects for consideration in each day's issue, keeps

a schedule of the articles, and makes up that portion of the paper. He is responsible to the editor-in-chief for the proper carrying out of the established policy of the paper, in regard to all principal questions, but is allowed great latitude in connection with the ordinary editorial writing. The number of editors, assistants, and reporters connected with a journal such as described is about 100, though this represents the staff of the very largest establishments. To bring out a daily paper of this character requires 60 to 100 compositors and more than 50 pressmen, stereotypers, folders, and wrappers. Added to this is an army of correspondents, not fewer than 600, and covering every important locality throughout the civilized world, while including also, as a rule, a correspondent with every naval squadron which departs from our ports. Last of all comes the business office, the centre toward which the result of the work of all these expert journalists and editors, whose duties are above described, finally is directed. Here, under the supreme direction of the general manager or business manager of the establishment, are conducted all its strictly business undertakings and all the vast purchases of plant and working material.

The modern N. presents itself as an organism, partaking of the character of an army, a hierarchy, and a civil state.

Recent statistics place the number of periodicals, daily, tri-weekly, semi-weekly, weekly, fortnightly, monthly, bi-monthly, quarterly, etc., published in the United States, as: 230 for 67 county seats and 125 towns in Alabama; 15 for 1 county seat and 11 towns in Alaska; 65 for 13 co. seats and 28 towns in Arizona; 299 for 83 co. seats and 165 towns in Arkansas; 768 for 55 co. seats and 275 towns in California; 360 for 56 co. seats and 150 towns in Colorado; 167 for 9 co. seats and 66 towns in Connecticut; 35 for 3 co. seats and 3 towns in Delaware; 64 for the District of Columbia; 170 for 45 co. seats and 81 towns in Florida; 370 for 125 co. seats and 197 towns in Georgia; 108 for 21 co. seats and 74 towns in Idaho; 1709 for 102 co. seats and 649 towns in Illinois; 35 for 6 towns in Hawaii; 212 for 131 towns in Indina Territory; 811 for 92 co. seats and 329 towns in Indiana; 1106 for 99 co. seats and 616 towns in Iowa; 748 for 103 co. seats and 410 towns in Kansas; 320 for 106 co. seats and 156 towns in Kentucky; 226 for 54 co. seats and 107 towns in Louisiana; 156 for 15 co. seats and 177 towns in Maine; 198 for 23 co. seats and 61 towns in Maryland; 691 for 20 co. seats and 212 towns in Massachusetts; 785 for 81 co. seats and 382 towns in Michigan; 794 for 82 co. seats and 421 towns in Minnesota; 246 for 80 co. seats and 143 towns in Mississippi; 1029 for 114 co. seats and 417 towns in Missouri; 108 for 26 co. seats and 54 towns in Montana; 626 for 90 co. seats and 359 towns in Nebraska; 39 for 11 co. seats and 26 towns in Nevada; 154 for 13 co. seats and 61 towns in New Hampshire; 378 for 21 co. seats and 152 towns in New Jersey; 73 for 21 co. seats and 39 towns in New Mexico; 2,005 for 63 co. seats and 510 towns in New York; 265 for 78 co. seats and 132 towns in No. Carolina; 270 for 37 co. seats

and 190 towns in No. Dakota; 1,161 for 88 co. seats and 413 towns in Ohio; 350 for 27 co. seats and 197 towns in Oklahoma; 234 for 33 co. seats and 121 towns in Oregon; 1,464 for 67 co. seats and 476 towns in Pennsylvania; 28 for 5 towns in Philippines; 22 for 3 co. seats and 4 towns in Porto Rico; 103 for 4 co. seats and 18 towns in Rhode Island; 57 for 40 co. seats and 69 towns in So. Carolina; 333 for 52 co. seats and 205 towns in So. Dakota; 322 for 85 co. seats and 136 towns in Tennessee; 899 for 204 co. seats and 482 towns in Texas; 89 for 22 co. seats and 47 towns in Utah; 103 for 12 co. seats and 67 towns in Vermont; 243 for 69 co. seats and 124 towns in Virginia; 303 for 37 so. seats and 664 towns in Washington; 217 for 55 co. seats and 92 towns in West Virginia; 725 for 71 co. seats and 332 towns in Wisconsin; 52 for 13 co. seats and 30 towns in Wyoming. Total for United States 22,392, with Canada 23,595, Alberta publishing 40, British Columbia 73, Manitoba 116, Saskatchewan 43, Yukon 6, New Brunswick 51, Nova Scotia 80, Ontario 615, Prince Edward Island 15, Quebec 148. Total for Canada (with Newfoundland 16) 1203. The total number of newspapers published in the world at present is estimated at between 55,000 and 60,000; more than half of these are printed in English. Besides the 23,595 enumerated above for the United States and Canada, other countries approximate Germany 8,000, Great Britain 8,000, France 4,500, Japan 2,000, Italy 1,500, Austria-Hungary 1,200, Australia 1,000, Asia (exclusive of Japan), 1,000, Spain 850, Russia 800, Greece 600, Switzerland 450, Holland 300, Belgium 300, all others 1,000.

See Andrew's *History of British Journalism* (Lond. 1859); Grant's *The Newspaper Press: Its Origin, Progress and Present Condition* (Lond. 1871); Hudson's *Journalism in the United States from* 1690 *to* 1872 (New York 1873); Pebody, *English Journalism* (Lond. 1882); and Fox Bourne, *English Newspapers* (Lond. 1887).

NEWSTEAD ABBEY, *nū'stĕd:* a monastic abbey (1170–1538), 8½ m. n. of Nottingham, England, given by Henry VIII., 1538, to Sir John Byron, whose descendant, in the time of Charles I., 1643, was made the first Lord Byron. It was made over by successive generations of Byrons into a fine baronial residence, with a beautiful estate. The fifth Lord Byron, after the homicide of a relative in a scuffle at a club dinner, shut himself up at N. A. for 33 years, 1765–98; and at his death left the title and property to his grand-nephew, the poet Byron, with the buildings in a ruined state, and the lands stripped of their trees. The poet had a few rooms made habitable, 1807, and lived there through part of the next two years. His mother died there, 1811, Aug. 1. It was sold, 1812, Sep., for £140,000, and £25,000 paid; but the buyer two years later forfeited this sum, and 1817, Nov., Byron sold it again for 90,000 guineas (£94,500), to Col. Thomas Wildman, who spent a vast sum in restoring the buildings. After his death, 1859, it was held for sale at £180,000, with but £121,000 bid for it. It was finally sold to Wm. Frederick Webb.

NEW STYLE: see CALENDAR: DATE.

NEWT, n. *nūt* [a supposed corruption of *an evet*—from OE. *evet*, a newt: AS. *efete*, an eft, a newt], (*Triton*): genus of batrachians of family *Salamandridæ*, more aquatic in their habits than the salamander, to which, in form and characters, they are very similar, having an elongated body and tail, and four small weak limbs. The tail is vertically compressed, and a crest is often developed on the back and tail, but the crest is characteristic of the males in the breeding season, and the tail becomes rounded when the animals leave the water, as they often do, particularly in the latter part of summer or in autumn; which, with other variations apparently dependent on circumstances, have caused multiplication of specific names. An abundant species is the COMMON N., or SMOOTH N. (*T. punctatus*, or *Lissotriton punctatus*, or *Lophinus punctatus*), 3½ to 4 inches long, brownish gray above, yellowish beneath, spotted with black, with soft, smooth skin, and two bands of pores on the head; well-known inhabitant of stagnant pools and ditches, often found also under stones and in other damp situations. The WARTY N. (*T. palustris*, or *cristatus*), also common, is 5 or 6 inches in length, blackish brown above with round spots of a darker tint, bright orange or orange-yellow with black spots on the under parts, the sides dotted with white, and the tail often exhibiting a white band, the skin rough or warty, and with many pores. The dorsal and caudal crests of the Warty N. are separate; those of the Common N. are united. Many other species occur in other parts of the world. They all feed on animal food, of which tadpoles and aquatic insects form chief portions. They deposit their eggs on the leaves of aquatic plants, each egg separately, twisting or folding the leaf with their feet so as to conceal the egg, which is surrounded by a viscous substance, so that the leaf is retained in this form. For the transformation of newts (with illustrations), see BATRACHIA. They very frequently change their skin. They possess, in an extraordinary degree, the power of reproducing lost members—a limb, a tail, even an eye—in every respect perfect. Spallanzani, who made many observations on this subject, found that the same member could be reproduced a number of times successively. Newts are also capable of surviving, though long frozen within ice, returning to activity when a thaw takes place. A strong and almost universal popular prejudice exists against them as most noxious animals, though they are not in the slightest degree venomous. They have recently, however, begun to be more favorably regarded as interesting inmates of aquaria. The above species, as foreign, first received the name N. The species of the c. United States are the SPOTTED TRITON (*Diemyctelus viridescens*), olive-green above, with lateral rows of red spots; and the RED EFT (*D. miniatus*) bright red, often found away from water.

NEW TES'TAMENT: see BIBLE.

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